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EVALUATION OF WILDLIFE  
MITIGATION SITES  
AT THE  
CHIEF JOSEPH DAM PROJECT  
(1993/1994 SEASON)

AD-A284 939



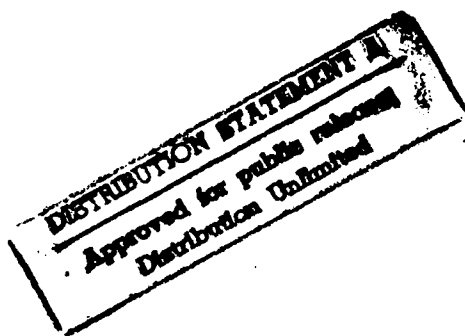
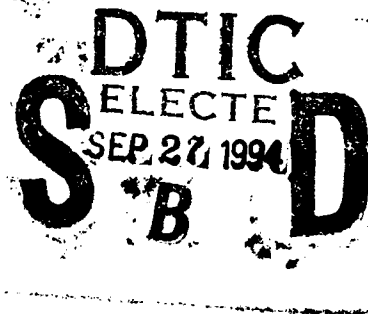
DCN

Prepared for:

U.S. Army Corps of Engineers  
4735 East Marginal Way S.  
Seattle, Washington 98124-2255

Contract Number:  
DACA67-93-D-1002

Delivery Order Number:  
0005



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94-30768



13608

July 22, 1994

94 9 26 071

8c. ADDRESS (City, State, and ZIP Code)			10. SOURCE OF FUNDING NUMBERS	
			PROGRAM ELEMENT NO.	PROJECT NO.
			TASK NO.	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification)				
Evaluation of wildlife mitigation sites at the Chief Joseph Dam Project				
12. PERSONAL AUTHOR(S)				
13a. TYPE OF REPORT		13b. TIME COVERED	14. DATE OF REPORT (Year, Month, Day)	15. PAGE COUNT
		FROM 1993 TO 1994	July 22, 1994	
16. SUPPLEMENTARY NOTATION				
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	SUB-GROUP	Mule deer	
			Upland game birds	
19. ABSTRACT (Continue on reverse if necessary and identify by block number)				

DTIC QUALITY INSPECTED 3

20. DISTRIBUTION / AVAILABILITY OF ABSTRACT		21. ABSTRACT SECURITY CLASSIFICATION
<input type="checkbox"/> UNCLASSIFIED/UNLIMITED	<input type="checkbox"/> SAME AS RPT.	<input type="checkbox"/> DTIC USERS

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## **PREPARERS AND CONTRIBUTORS**

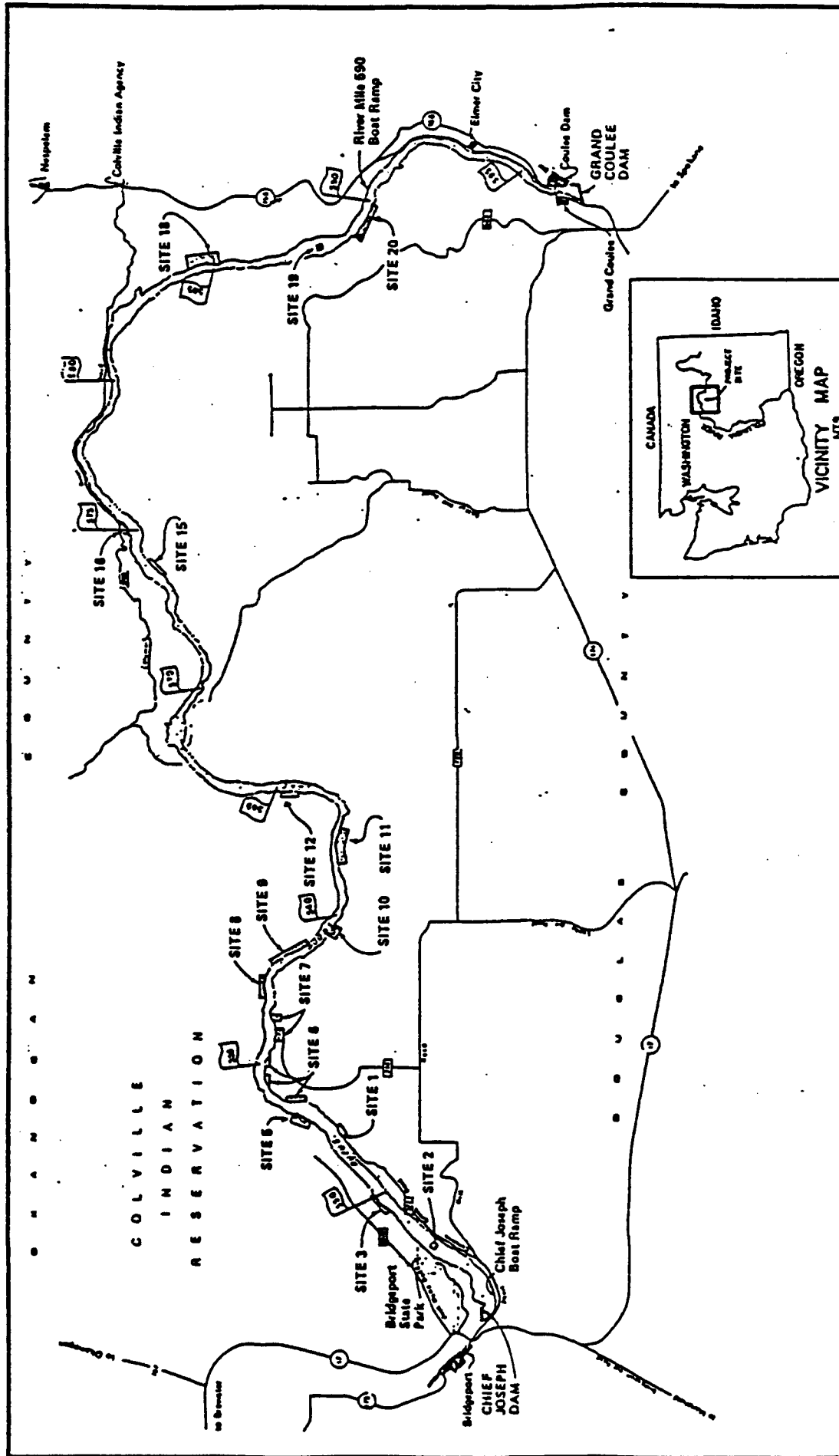
This project was completed by David Evans and Associates, Inc. (DEA) under contract with the Seattle District U.S. Army Corps of Engineers (Corps). Field work, data analysis, and report preparation were completed by Bret Forrester with support from Benn Burke. Thomas Duebendorfer provided plant identification assistance and additional field support. Andy Gorski acted as project manager for DEA and was responsible for quality control. Ronald D. Kranz served as principal-in-charge for DEA. Ken Brunner (Corps) served as project manager.

## INTRODUCTION

Rufus Woods Lake is a 52-mile long reservoir created by the construction of Chief Joseph Dam in 1955. Rufus Woods Lake is in the Columbia Basin Province of north central Washington (Figure 1). The north bank lies within Okanogan County and the south bank within Douglas County. The shoreline is in a mix of private, state, federal, and tribal ownership. The Corps administers all but the uppermost six miles of the lake, which is administered by the U.S. Bureau of Reclamation.

The climate in the area is semi-arid with dry, hot summers and cold, dry winters. Average temperatures range from 78 to 90 degrees F in summer and 25 to 32 degrees F in winter. Average annual precipitation is approximately 10 inches, most of which occurs in winter as snowfall. The physiography in the vicinity of Rufus Woods Lake includes flat to moderately sloping terraces, rising either gently or abruptly to over 1,000 feet above the lake. The substrate consists primarily of basalt and granite. Shrub-steppe is the primary vegetation association that surrounds the lake. Sagebrush and grasses are the dominant vegetation. Other less common associations present include arid coniferous forest predominantly on north facing slopes and riparian zones dominated by deciduous trees and shrubs along perennial and seasonal water courses. These vegetation associations create a variety of wildlife habitats throughout the region.

Much of the land along Rufus Woods Lake is being utilized for agricultural purposes which has resulted in various levels of alteration to the native vegetation. Rangeland and orchard farming are the primary agricultural uses along the Lake. Grazing by livestock in rangeland areas has also resulted in the reduction of native plants and promoted the occurrence of non-native, weed species. Orchards and other crop production have eliminated all native vegetation in those areas. In 1981, the Seattle District of the Corps modified the Chief Joseph Dam project by raising the operating pool level by 10 feet. This project is referred to as the Chief Joseph Dam Additional Units Project and its implementation resulted in the inundation and elimination of approximately 100 acres of riparian habitat along the shores of Rufus Woods Lake. Pre-pool raise studies conducted by the University of Washington and the Washington Department of Fish and Wildlife (WDFW) provided information on the magnitude of these losses and recommended some methods of mitigation. Design memorandum (DM) 52, prepared by the Corps, documented habitat losses and proposed mitigation plans (Corps 1980). In response to agency concerns, the Corps implemented a mitigation program in 1982 and completed it in 1984. The mitigation program was designed to replace approximately 100 acres of riparian habitat lost to the pool raise by planting 100 acres of shrubs and trees, providing irrigation, and fencing the mitigation areas to exclude livestock, yet allow entry by native wildlife. In addition, approximately 530 acres of other land (mostly shrub-steppe) were fenced to exclude livestock and promote restoration and more productive conditions. The ultimate goal is to restore wildlife populations to numbers equal to those that existed prior to the pool raise. The primary target species are mule deer, Canada geese, bald eagles, and upland game birds. Other wildlife that benefit include non-game birds and mammals, and aquatic furbearers. DM 52 described a monitoring program that would be conducted on a five-year cycle for a duration of 25 years to evaluate the effectiveness of the mitigation project. The mitigation monitoring began in 1986 and continued through 1989. This report presents the findings from the second monitoring cycle which was conducted during the 1993/1994 season.



**FIGURE 1**  
**VICINITY MAP**  
 Chief Joseph Dam Project - Mitigation Sites  
 U.S. Army Corps of Engineers

SHAPIRO &  
 ASSOCIATES



## **AUTHORITY**

Section 2(g) of the Fish and Wildlife Coordination Act of 1958 (Public Law 8-624) specifies mitigation requirements that apply to water projects. For the Chief Joseph Dam Additional Units Project, comprehensive baseline studies and a Habitat Evaluation Procedure (HEP) were used to assess the impacts and determine necessary compensation. DM 52 proposed a mitigation plan that was approved by higher authority and implemented. DM 52 requested technical site evaluation studies for 25 years to ensure that necessary adjustments in site management are accomplished to achieve initial project purposes. Representatives from the Corps, U.S. Fish and Wildlife Service (USFWS), WDFW, Colville Confederated Tribes (CCT), U.S. Forest Service (USFS), and the Soil Conservation Service (SCS) serve as an interagency group to evaluate the studies' findings and recommend changes in the operation and maintenance of the mitigation programs. This third study was funded by the U.S. Army Corps of Engineers.

## **OBJECTIVES**

This monitoring study was designed to accomplish the following objectives:

- Determine the effectiveness of the mitigation components at meeting their intended goal. Specifically, did the plantings survive and grow as expected?
- Determine the effectiveness of the mitigation efforts. Specifically, do the newly created "riparian" habitats provide effective food and cover for wildlife? Are there any noticeable effects on wildlife populations as a result of the mitigation?
- Determine whether the mitigation program has any inherent or incidental problems or weaknesses, and whether simple solutions can be found to correct the problem(s).

## **DESCRIPTION OF MITIGATION SITES**

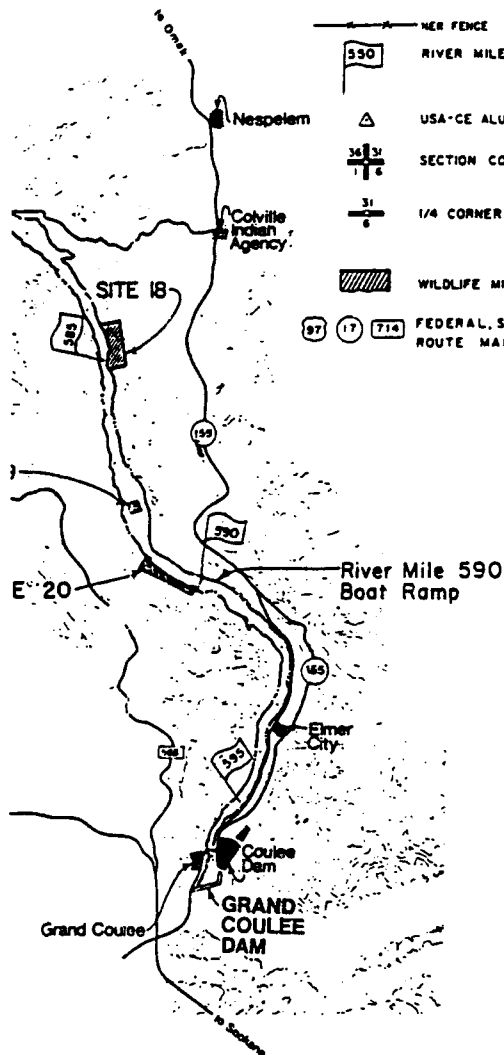
Mitigation is being accomplished through the operation of 16 constructed sites. Six are located on the north bank in Okanogan County and 10 on the south bank in Douglas County (Figure 2). Six of these sites (1, 3, 5, 11, 12, and 15) were irrigated in 1987 to support planted riparian shrubs and trees. Irrigation has been conducted each growing season since 1987 and is scheduled to continue for the duration of the project. These six irrigated sites and three additional sites (7, 8, and 18) have been fenced to exclude livestock while still allowing access to native wildlife. Sites 11 and 15 have been temporarily fenced to exclude deer until the sites recover from overbrowsing. Goose brooding islands and pastures have been developed at sites 10, 12, 16, and 18. Raptor poles were erected at five mitigation sites (3, 6, 7, 9, and 20) to replace inundated trees and snags, and goose nest tubs were installed at six sites (2, 3, 7, 10, 12, and 19).

# SAFETY

REVISIONS			
NO.	DATE	DESCRIPTION	BY

## LEGEND

- WILDLIFE TRACT BOUNDARY
- EXISTING WATER LEVEL (1946 POOL)
- NEW FENCE
- 590 RIVER MILE DESIGNATION
- △ USA-CE ALUMINUM MONUMENT
- 34 31 SECTION CORNER
- 31 1/4 CORNER
- WILDLIFE MITIGATION SITE
- 97 17 714 FEDERAL, STATE AND COUNTY ROUTE MARKERS



LOCATION PLAN



SCALE 0 1 2 3 4 MILES



FIGURE 2  
MITIGATION SITE  
LOCATIONS

Over the past ten years, six additional raptor poles were erected at sites 5, 7, 9, and 10, and ten additional goose nest tubs were installed at sites 1, 7, 10, 12, and 16. These additional features were not part of the initial mitigation design and are not evaluated under this contract.

Irrigation systems consist of well-head units that pump lake water to sprinkler heads. The sprinkler units distribute water in either a 100-foot or 140-foot radius, depending on the type of sprinkler head. Riparian habitat is being developed at all the irrigated sites. Trees, shrubs, and grasses have been planted within the irrigated portions of these sites.

Site 1 (Willows Draw) is located at river mile (RM) 551.5 on the south bank. The site is approximately 10 acres, 4.6 of which are irrigated. Five sprinkler heads are present. Adjacent landowners have erected fences to exclude deer from their orchards. This has limited, but not restricted, deer access to the site.

Site 2 (Goose Island) is located at RM 548 along the south bank. There are two goose nest tubs at this site where formerly there was a rock island prior to the pool raise.

Site 3 (Wells Flat) is an irrigated site located on the north bank in at RM 550. About 22.4 acres of the 45-acre site are irrigated with 12 sprinkler heads. There are three raptor poles and three goose nest tubs at this site. Deer fences around adjacent orchards substantially limit deer access to the site.

Site 5 (Arrowhead) is located at RM 553 on the north bank. About 18 acres of this 45-acre site is irrigated with 15 sprinkler heads. Similar to site 3, deer fences around adjacent orchards limit deer access to this site. The shoreline vegetation is maintained by the Corps by mowing to provide a goose brooding pasture.

Site 6 (China Knoll) is located at RM 554 on the south bank. Eight raptor poles are present on a bluff above the lake. This site is not fenced.

Site 7 (Box Canyon) is located on the south bank at RM 556. Approximately 210 acres have been fenced in two sections to keep livestock out. Three goose nest tubs and four raptor poles have been constructed at this site. A portion of the shoreline is mowed to create goose brooding pasture.

Site 8 (Tumwater Basin) is located on the north bank at RM 558. The site is five acres and is fenced to exclude livestock and protect a riparian draw.

Site 9 (Bryan Spring) is located at RM 557.5 on the north bank. Five raptor poles have been installed on the top of the hillside. The site is not fenced.

Site 10 (Lone Pine) is located on the south bank at RM 559. An island has been created at the downstream end of the site for goose nesting. Also part of this site, Lone Pine Island is a small rock island that is inundated at high pool level. Two goose nest tubs are mounted on Lone Pine Island.

Site 11 (Allen Bar) is a 62-acre irrigated and fenced site located on the south side of the lake at RM 562. Approximately 27 acres are irrigated with 24 sprinkler heads. This site has been fenced since 1986 to exclude deer until the shrubs can recover from previous overbrowsing.

Site 12 (Timm's Ranch) is located at RM 565 on the north bank. About 11.4 acres are irrigated by 15 sprinkler heads on this 31-acre fenced site. A goose brooding pasture has been established and two goose nest tubs have been erected on this site.

Site 15 (Alameda Flat) is located on the south bank at RM 574. About nine acres of this 28-acre site are irrigated. The site is permanently fenced to exclude livestock. Temporary fencing was added in late 1987 to exclude deer to prevent overbrowsing of mitigation plants.

Site 16 (Hopkins Canyon) is located at RM 576 on the north bank. Channels have been dug around a large rock outcropping to form a goose island. About 5.8 acres have been fenced for a goose brooding pasture.

Site 18 (Bailey Basin) is located along the north side at RM 585. Approximately 283 acres have been fenced to keep livestock out. A goose brooding pasture has been established. There are several riparian draws and a small wetland on the site.

Site 19 (Buckley Bar) is an island located near the south bank at RM 587. Two goose nest tubs have been installed on the downstream end of the bar.

Site 20 (Sanderson Creek) is located on the south side at RM 589. Five raptor poles have been installed on this site and it is not fenced.

## METHODS

Between June 10, 1993 and March 17, 1994, the following monitoring has been conducted by DEA to evaluate the progress of the mitigation project:

- shrub and tree canopy coverage;
- forb/grass coverage;
- deer browse utilization;
- mule deer fawn surveys;
- upland game bird surveys; and
- other wildlife observations.

The remaining four monitoring tasks were conducted by the Corps. These tasks include the following:

- bald eagle surveys;
- bald eagle perch site surveys;
- raptor pole surveys; and
- Canada goose brooding surveys.

## **Vegetation Monitoring**

The vegetation monitoring is composed of three monitoring tasks: (1) shrub and tree canopy coverage, (2) forb/grass coverage, and (3) deer browse utilization. A total of 110 permanent transects were previously established in four different community types on the mitigation sites: irrigated riparian, native riparian, bitterbrush, and big sage (Appendix A). Ten, 100-foot long transects were previously established in each of the three non-irrigated habitats. Eighty transects are located in the irrigated riparian areas with lengths ranging from 100 to 150 feet long, depending on the range of the sprinklers. The transects were established prior to the first monitoring session and are intended to be used for vegetation monitoring throughout the 25-year monitoring period.

The nature of the natural riparian vegetation in the project area (long and narrow), and the artificial nature of the irrigated mitigation sites (round), does not allow for control sites that can be compared with the mitigation sites. Thus, controls were established only for comparison with the bitterbrush, big sage, and native riparian habitats at the fenced shrub-steppe sites (sites 7 and 18). Control transects were established in bitterbrush, big sage, and riparian habitats at unfenced sites 6, 9, and 20. The comparison of the results from the control transects with the appropriate transects from the fenced shrub-steppe sites is intended to enable an evaluation of the effects of fencing.

**Shrub and Tree Canopy Coverage.** Line-intercept sampling methods, as described by Kaiser (1983) and conducted by Shapiro and Associates (Shapiro 1987), were used to determine canopy coverage for trees and shrubs along the 110 transects (Appendix A). Data were collected at eleven sites (1, 3, 5, 6, 7, 9, 11, 12, 15, 18, and 20). Each shrub and tree species that crossed an imaginary vertical plane above the transect was counted and its length along the transect recorded. Since all tree and shrub vegetative layers were recorded, coverage of more than 100% was possible when more than one species occupied the same segment(s) (overlapped) along the transects. Total coverage for each species, along each transect was calculated and combined to get the absolute average cover by site and/or habitat type. The goal of the mitigation plan is to achieve approximately 25 percent coverage of shrubs and trees at maturity (about 10-20 years for shrubs and longer for trees). Shrub and tree canopy coverage sampling was conducted from June 10 to July 1, 1993.

**Forb/Grass Coverage.** Quadrats 25 cm by 50 cm were placed at ten foot intervals on alternating sides of the 110 permanent transects (Appendix A). Sampling techniques were conducted following Barbour, et al. (1980) and Shapiro (1987). The percent cover for the three dominant species was estimated, unless fewer than three species were present. Data were collected at the same eleven sites (1, 3, 5, 6, 7, 9, 11, 12, 15, 18, and 20). Total coverage for each species, along each transect was calculated and combined to get the absolute mean average cover by site and/or habitat type. Forb/grass cover sampling was conducted from June 10 to July 1, 1993.

**Deer Browse Utilization.** Browse utilization was estimated using the methods described by Stickney (1966) and Shapiro (1989). The percentage of twigs browsed was determined by locating previously established random points along all but the big sage transects (two points on native riparian transects and one point on the remaining transects) (Shapiro 1987)(Appendix A). At every point, the nearest shrub was chosen in each of the four compass directions. The shrubs

observed were intentionally limited to red-osier dogwood (*Cornus stolonifera*), common snowberry (*Symphoricarpos albus*), currant (*Ribes* spp.), black hawthorn (*Crataegus douglasii*), western serviceberry (*Amelanchier alnifolia*), blue elderberry (*Sambucus cerulea*), smooth sumac (*Rhus glabra*), and Wood's rose (*Rosa woodsii*) since these species are known to be browsed by deer. Each shrub chosen was divided into quarters, and up to ten twigs were observed in each quarter, for a total of up to 40 leaders per plant. For any shrub with less than 40 twigs, all twigs were observed. The number of browsed and unbrowsed twigs were counted and recorded to estimate the percent of twigs browsed. Twig sampling was conducted from October 26 to 29, 1993, and again from March 15 to 17, 1994. The October survey was conducted after the plants had stopped growing and therefore, estimated deer browse during the previous spring and summer. The March survey was conducted before the plants began to grow and thus, estimated deer browse during the previous winter. Since no growth occurred between the surveys, evidence of summer browse was still present in March, therefore the October counts were subtracted from the gross spring counts to get the net percent browse from the winter months.

### **Wildlife Monitoring**

Although the mitigation efforts are intended to benefit a wide variety of wildlife species, the wildlife monitoring plan emphasizes the primary target species: mule deer, Canada geese, bald eagles, and upland game birds. No specific surveys have been established for other species, however, all species of wildlife observed during the monitoring and their locations were documented. The monitoring surveys are not intended to estimate wildlife population numbers, rather they are intended to identify relative wildlife use of the mitigation sites and compare it to prior monitoring results. As stated above, DEA conducted only three of the seven wildlife monitoring tasks: (1) mule deer fawn surveys, (2) upland game bird surveys, and (3) observations of other wildlife.

**Mule Deer Fawn Surveys.** Four mule deer fawn surveys were conducted on eight sites (1, 3, 5, 7, 12, 18, 19, and 20). Two surveys were conducted in July and two in August 1993. Each site was walked by one biologist who began at one end of the site and investigated likely places where deer with fawns might bed down (i.e. areas that provide thermal or escape cover). A second biologist remained in the boat off-shore and observed the area around the on-site biologist in an attempt to spot any fawns out of sight from the on-site biologist. The two biologists maintained radio communication to assure that the same deer were not counted twice. The number of fawns observed were counted and fawn sign was documented when it was distinguishable from adult sign. The number and sex of adult deer observed were also noted.

**Upland Game Bird Surveys.** Six upland game bird surveys were conducted on six sites (1, 3, 5, 6, 11, 12, 15, and 18). One survey was conducted in July 1993, two in August 1993, and three in January 1994. One biologist, accompanied by a trained dog, followed the transects established by Shapiro (1987) (Appendix B). The number and species of game birds flushed were recorded. The dog was expected to cover approximately 50 feet of area on both sides of the transect (100-foot wide band). The dog used had previous experience flushing game birds and also showed a desire to locate birds.

The high survey counts of each species of game bird per site were totaled. Each species total was then divided by the number of acres surveyed (72.4) to get the total number of birds/acre.

This method of calculation is consistent with calculations made in earlier studies and was used to facilitate comparison of results. The intent is not to estimate the population levels of each species, but to derive a population index for each species that can be used to compare relative levels of site use during different seasons and years.

**Other Wildlife Observations.** No separate surveys were conducted for other wildlife. However, all species identified during other surveys, as well as their locations, were documented and presented in this report. These observations were made at varying times and durations depending on the size and extent of other tasks performed on-site. Because of this variability in observation effort, wildlife presence data is not comparable between sites and can not be used to estimate relative levels of wildlife use.

## RESULTS

### Vegetation Monitoring

Table 1 presents the results of the vegetation monitoring that was conducted along the previously established 80 irrigated transects and 30 non-irrigated transects (Shapiro 1987)(Appendix A). 124 plant species were identified by DEA in and around the mitigation sites during this study. The common and scientific names of these plants are presented in Appendix C.

**Shrub and Tree Canopy Coverage.** Shrub and tree canopy coverage sampling was conducted from June 10 to July 1, 1993. The average total coverage for the irrigated sites was 55.3 percent (Table 1). This compares to 10.6 percent coverage estimated by Shapiro (1987). Shrub and tree coverage has increased 44.7 percent on the irrigated sites in the last seven years. Coverage in 1993 (eleventh year of the project) was 30.3 percent greater than the mitigation goal of 25 percent at the tenth year. Coverage on the irrigated sites ranged from a low of 32.7 percent at site 11 to 93.3 percent at site 3 (Table 1).

In general, the shrub plantings on the irrigated sites tend to be concentrated near the center of the mitigation circles and the trees occur toward the perimeter. This planting pattern was necessary to allow plant compatibility with the pattern of spray from the sprinklers. In numerous locations where trees have not been planted far enough from the center of the site (sprinkler head), the stream of water from the sprinklers have sheared off the tops of the trees.

Although shrub and tree coverage is relatively sparse on some transects (primarily at site 11), the majority of the plantings are dense and prolific. Many shrub species are reproducing (primarily Wood's rose) and most trees are flowering and producing seeds. Tree height is generally consistent between irrigated sites with the average height estimated between 20 and 30 feet.

**Table 1: Comparison of Shrub and Tree Monitoring Results  
on Irrigated Sites (expressed in average percent cover)**

Site	Number of Transects	1987*	1993	Difference
1	5	12.0 %	77.0 %	65.0 %
3	12	16.6 %	93.3 %	76.7 %
5	15	15.7 %	61.3 %	45.6 %
11	24	6.8 %	32.7 %	25.9 %
12	15	9.8 %	57.9 %	48.1 %
15	9	5.9 %	38.9 %	33.0 %
Total	80	10.6 %	55.3 %	44.7 %

\* Shapiro 1987

Although coverage and vitality of shrub and tree mitigation plantings is generally high, invasive shrubs, primarily Himalayan blackberry, have established at most irrigated sites. Himalayan blackberry was documented along 28 of the 80 irrigated transects. Given the invasive nature of Himalayan blackberry, it may likely outcompete the surrounding mitigation plants if its presence is permitted. Such invasion has already taken place at most of the irrigated circles at sites 1 and 12. Large growths of Himalayan blackberry have also established at least one irrigated circle on the remaining irrigated sites (sites 3, 5, 11, and 15). Other, invasive weeds (e.g. sweet clover [*Melilotus* spp.], mullein [*Verbascum thapsus*]) also occur regularly around the outer perimeter of most irrigated circles, outside of the area sampled by the transects.

Overall coverage for the fenced big sage transects was 41.6 percent, an 18.2 percent increase from the 1987 study (Table 2). Unfenced sites also had an increase (7.4 percent) in big sage coverage. Big sage is present in all age classes on both fenced and unfenced sites. Small plants are present, thus indicating reproduction on all sites. No significant difference between the fenced and unfenced big sage transects is noticeable following the shrub and tree coverage results.

Coverage along bitterbrush transects on the fenced sites increased 7.6 percent from the 1987 study to an average of 42.1 percent coverage. Coverage along unfenced bitterbrush transects increased 27.1 percent to a total of 49.9 percent. Bitterbrush plants on site 6 (unfenced) are typically large, old individuals with sparse vegetation on the lower portions of most plants. Small bitterbrush plants are uncommon on site 6, thus indicating low regeneration. Small plants are more common on the remaining sites, but large, old bitterbrush are most common. Compared to the big sage transects, bitterbrush reproduction appears to be less successful on both the fenced and unfenced sites.



**Table 2: Comparison of Shrub and Tree Monitoring Results on Non-Irrigated Sites (expressed in average percent cover)**

Site	Number of Transects	1987*	1993	Difference
<b>Big Sage</b>				
Fenced (7 & 18)	5	23.4 %	41.6 %	18.2 %
Unfenced (6, 9 & 20)	5	16.1 %	23.5 %	7.4 %
<b>Bitterbrush</b>				
Fenced (7 & 18)	5	34.5 %	42.1 %	7.6 %
Unfenced (6, 9 & 20)	5	22.8 %	49.9 %	27.1 %
<b>Riparian</b>				
Fenced (7 & 18)	5	91.9 %	131.7 %	39.8 %
Unfenced (9 & 20)	5	89.1 %	108.8 %	19.7 %

\* Shapiro 1987

The fenced native riparian transects increased 39.8 percent to an average coverage of 131.7 percent. Unfenced native riparian transects also displayed an increase in cover of 19.7 percent to yield an average of 108.8 percent cover. Transects R-1 and R-2 in the unfenced native riparian habitats on site 20 were virtually barren of shrub and tree vegetation throughout the lower strata, but were generally dense in the upper layers above about four feet. Because of the sampling procedures, the shrub and tree sampling results did not indicate the stratified vegetation. This sparse lower strata is apparently a result of livestock presence on this site. The two unfenced riparian transects on site 9 (R-1 and R-2) and R-3 on site 20 are located in steep sided and/or steep narrow draws that appear to be largely inaccessible to cattle. Accordingly, the shrub and tree vegetation along these transects is dense throughout all strata. Although these sites are unfenced, the presence of livestock may not have an impact in these areas because of the relatively inaccessible locations.

**Forb/Grass Cover.** Forb/grass cover sampling was conducted from June 10 to July 1, 1993. The average total coverage for the irrigated sites was 101.4 percent (Table 3). This compares to 70.6 percent coverage estimated by Shapiro in June 1986 (Shapiro 1987). Forb/grass coverage has increased 30.8 percent on the irrigated sites in the last seven years. Bare areas most often

only occur below dense shrub and tree canopies. Hard fescue (*Festuca ovina*) was the dominant species at all irrigated sites. Coverage of hard fescue ranged from 78.0 percent at site 1 to 93.1 percent at site 11. The remaining forb/grass species coverage was less than 10 percent at all sites except 15 where sweet clover (*Melilotus* spp.) had an average coverage of 16.1 percent.

**Table 3: Comparison of Forb/Grass Monitoring Results  
on Irrigated Sites (expressed in average percent cover)**

Site	Number of Transects	1987*	1993	Difference
1	5	85.4 %	104.3 %	18.9 %
3	12	70.3 %	94.2 %	23.9 %
5	15	64.7 %	99.4 %	34.7 %
11	24	73.1 %	105.4 %	32.3 %
12	15	74.0 %	91.3 %	17.3 %
15	9	60.4 %	118.9 %	58.5 %
Total	80	70.6 %	101.4 %	30.8 %

\* Shapiro 1987

Forb/grass cover increased 42.8 percent since 1987 to a total of 105.3 percent on the fenced big sage transects (Table 4). Cheatgrass (*Bromus tectorum*) was the dominant species with 60.7 percent coverage (43 occurrences). All other forb/grass species had less than 6 percent cover. Unfenced big sage transects yielded 57.6 percent forb/grass coverage, an increase of 13.8 percent over the 1987 survey. Cheatgrass at 17.0 percent coverage (20 occurrences) was also the dominant. All other forb/grass species on the unfenced big sage transects had less than 9 percent cover.

Forb/grass cover increased 20.9 percent since 1987 to a total of 64.6 percent on the fenced bitterbrush transects (Table 4). Cheatgrass was the most common species with 28.9 percent coverage (39 occurrences). Needle-and-thread grass (*Stipa comata*) was second most abundant with 20.4 percent coverage (23 occurrences). Unfenced bitterbrush transects yielded 82.8 percent forb/grass coverage, an increase of 21.3 percent over the 1987 survey. Cheatgrass at 38.1 percent coverage (41 occurrences) and needle-and-thread grass at 10.1 percent coverage (15 occurrences) were also the dominant species.

**Table 4: Comparison of Forb/Grass Monitoring Results  
on Non-Irrigated Sites (expressed in average percent cover)**

Site	Number of Transects	1987*	1993	Difference
<b>Big Sage</b>				
Fenced (7 & 18)	5	62.5 %	105.3 %	42.8 %
Unfenced (6, 9 & 20)	5	43.8 %	57.6 %	13.8 %
<b>Bitterbrush</b>				
Fenced (7 & 18)	5	43.7 %	64.6 %	20.9 %
Unfenced (6, 9 & 20)	5	61.5 %	82.8 %	21.3 %
<b>Riparian</b>				
Fenced (7 & 18)	5	54.1 %	76.0 %	21.9 %
Unfenced (9 & 20)	5	49.2 %	83.1 %	33.9 %

\* Shapiro 1987

The fenced riparian areas had a forb/grass cover increase of 21.9 percent over the 1987 results (Table 4). Total coverage was 76.0 percent compared to 54.1 percent in 1987. Star Solomon's seal (*Smilacena stellata*) was the dominant species with 23.0 percent cover (21 occurrences). The remaining forb/grass species all had less than 10 percent coverage along the fenced riparian transects. The unfenced riparian areas had 83.1 percent coverage, an increase of 33.9 percent over the 1987 results. The dominant species were Idaho fescue (*Festuca idahoensis*) with 16.1 percent coverage (9 occurrences) and giant wildrye (*Elymus cinereus*) with 14.0 percent coverage (8 occurrences).

**Deer Browse Utilization.** Deer browse utilization was sampled October 26 through 29, 1993 (fall) and again from March 15 through 17, 1994 (spring). Fall results showed an average decrease in use of 5 percent on the irrigated sites in comparison with the fall 1987 results (Shapiro 1989) (Table 5). However, the Shapiro study surveyed site 15 in the fall which had 47.7 percent browse utilization, whereas site 15 was not surveyed during the 1993/1994 study because it was fenced in late 1987 with a deer fence, and the fence still remains. Site 12 had the greatest fall browse utilization at 19.9 percent and site 1 had the lowest utilization at 3.9

percent. Red-osier dogwood and black hawthorn had the highest fall browse utilization at 27.7 percent and 22.0 percent respectively (Table 6).

**Table 5: Comparison of Deer Utilization of Shrubs  
(expressed in percent of twigs browsed)**

Site	1987 Study <sup>1</sup>	1989 Study <sup>2</sup>		1994 Study	
	Total	Fall 1987	Spring 1988	Fall 1993	Spring 1994
<b>Irrigated</b>					
1	17.9 %	16.0 %	5.7 %	3.9 %	6.2 %
3	1.9 %	2.9 %	2.9 %	7.2 %	1.8 %
5	25.2 %	9.5 %	6.2 %	11.2 %	1.1 %
12	27.6 %	17.0 %	13.1 %	19.9 %	0 %
15	43.8 %	47.7 %	--	--	--
Total Irrigated	24.0 %	16.9 %	7.5 %	11.9 %	0.7 %
<b>Non-irrigated</b>					
Riparian	43.5 %	15.3 %	4.7 %	28.6 %	4.5 %
Bitterbrush	40.7 %	11.0 %	18.0 %	46.0 %	12.4%

<sup>1</sup> Shapiro 1987 (different methods were used for this study and results may not be comparable; only winter browse activity was sampled).

<sup>2</sup> Shapiro 1989 (the study was conducted in 1987/1988, but the report was completed in 1989).

<sup>3</sup> Total percent use equals the sum of the twigs browsed divided by the sum of the twigs sampled.

**Table 6: Percent Browse Utilization by Shrub Species**

Species	Number of Shrubs	Fall 1993	Spring 1994
<b>Irrigated</b>			
western serviceberry	8	11.5 %	5.7 %
red-osier dogwood	33	27.7 %	0 %
black hawthorn	6	22.0 %	0 %
smooth sumac	6	3.5 %	0 %
golden currant	19	8.8 %	0 %
squaw currant	2	5.0 %	1.1 %
Wood's rose	71	7.9 %	1.8 %
blue elderberry	7	9.8 %	1.8 %
common snowberry	32	5.5 %	0 %
bitterbrush	1	0 %	5.0 %
<b>Riparian</b>			
western serviceberry	11	11.0 %	10.2 %
red-osier dogwood	16	38.4 %	1.3 %
black hawthorn	20	42.7 %	0 %
smooth sumac	3	13.9 %	0 %
squaw currant	4	0 %	0 %
Wood's rose	9	16.7 %	1.7 %
common snowberry	4	0 %	0 %
bitterbrush	6	39.2 %	27.5 %
<b>Bitterbrush</b>			
bitterbrush	48	46.0 %	12.4 %

Spring results on the irrigated sites show a 6.8 percent decrease in deer browse utilization below the spring 1988 study results. Browse results on the irrigated sites ranged from a high of 6.5 percent on site 1 to a low of no browse detected on site 12. Western serviceberry and bitterbrush had the highest browse results on the irrigated sites at 5.7 percent and 5.0 percent, respectively. The remaining species had 2.0 percent or less.

The non-irrigated riparian shrubs sampled during the fall 1993 survey had a 28.6 percent average utilization, a 13.3 percent increase over the fall 1987 results (Shapiro 1989). Black hawthorn, bitterbrush, and red-osier dogwood had the highest fall deer browse use at 42.7 percent, 39.2 percent, and 38.4 percent respectively.

The 1994 spring results on the native riparian transects were 0.2 percent lower than in 1988. Bitterbrush had the highest ratio of browse at 27.5 percent. The next greatest was western serviceberry at 10.2 percent. The remaining species had less than 2.0 percent browse.

The bitterbrush transect results indicate fall browse utilization of 46.0 percent, a 35.0 percent increase over the fall 1987 results. Spring results on the bitterbrush transects decreased 5.6 percent over the 1988 spring results for a total of 12.4 percent.

If the 1987 results from site 15 are omitted, the fall browse results from the irrigated sites for 1987 and 1994 are about the same. The fall results increased in 1994 on the non-irrigated sites. Spring results generally decreased on the irrigated and bitterbrush sites in 1994. Spring browse results from riparian areas were nearly the same in both years.

### Wildlife Monitoring

**Mule Deer Fawn Surveys.** A total of 12 mule deer fawns were observed during the surveys on the specified sites (Table 7). Seven of these sightings were on site 7. Ten occurred on non-irrigated sites (sites 7, 18, and 19) and two on irrigated site 5.

**Table 7: 1993 Mule Deer Fawn Survey Results**

Site	July (1st survey)			July (2nd survey)			August (1st survey)			August (2nd survey)		
	Fawn	♀	♂	Fawn	♀	♂	Fawn	♀	♂	Fawn	♀	♂
1	0	0	0	0	0	0	0	0	0	0	0	0
3	0	0	0	0	1	0	0	0	0	0	1	0
5	2	1	0	0	0	0	0	0	0	0	0	0
7	4	19	0	1	4	1	2	9	1	0 *	9	0
12	0	0	0	0	1	0	0	0	0	0	0	0
18	1	0	0	0	0	0	0	0	0	1	1	0
19	0	1	0	1	0	0	0	0	0	0	0	0
<b>Total</b>	<b>7</b>	<b>21</b>	<b>0</b>	<b>2</b>	<b>6</b>	<b>1</b>	<b>2</b>	<b>9</b>	<b>1</b>	<b>1</b>	<b>11</b>	<b>0</b>

\* = one dead fawn found

Fewer fawns were observed in 1993 compared to past surveys conducted in 1987 and 1988 by Shapiro. In the 1987 survey, high counts of fawns observed during fawn surveys totaled 28, however, all were counted on one site (site 7) (Table 8). Total of high counts from the 1988 survey was 33. Fawns were observed on four different sites (sites 1, 6, 7, and 12) in 1988, but 29 of the observations were made on site 7. High counts from the 1993 surveys totaled 11 fawns which were observed on four different sites (sites 5, 7, 18, and 20). Six were observed on site 7. Eight of the 12 fawn sightings (67 percent) were from the Douglas County (south) shoreline. In the 1987 survey, 100 percent of the fawns were observed along the Douglas County (south) shoreline and 98 percent during the 1988 survey.

Each year a different combination of mitigation sites were surveyed, therefore, a direct comparison can not be made for the entire survey. Fewer fawns were observed on site 7 during the 1993 survey than during the prior two surveys. A high count of four fawns were observed on site 7 in 1993 compared to a high of 19 during the 1988 survey and 15 during the 1987 survey. The remaining sites surveyed counted two or less fawns during each survey during the 1987, 1988, and 1993 studies. Because of the small number of fawns observed per site, a trend in fawn presence can not be determined with confidence.

**Table 8: Comparison of High Counts From Mule Deer Fawn Surveys**

Site	1987 <sup>1</sup>		1988 <sup>2</sup>		1993	
	July	August	July	August	July	August
1	0	0	1	0	0	0
3	0	0	0	0	0	0
5	0	0	NS	NS	2	0
6	NS	NS	1	1	NS	NS
7	13	15	10	19	4	2
12	0	1 <sup>3</sup>	0	1	0	0
15	0	0	NS	NS	NS	NS
18	NS	NS	NS	NS	1	1
20	NS	NS	NS	NS	1	0

<sup>1</sup> Shapiro 1987

<sup>2</sup> Shapiro 1989

<sup>3</sup> observed during other survey

NS = site not surveyed

Overall deer counts (fawns and adults) were lower during the 1993 surveys than in the previous surveys. As with the fawn counts, by far the most deer were observed at site 7, but less than in previous surveys. Deer or deer sign was observed at all sites visited by DEA in 1993 and 1994.

**Upland Game Bird Surveys.** Results of the summer upland game bird surveys are presented in Table 9. Tables 10 and 11 illustrate comparisons of results of past summer upland game bird surveys with the 1993 survey results. By comparison with the summer 1987 and 1988 surveys, chukar, gray partridge and mourning dove sightings decreased significantly and ring-necked pheasant and California quail sightings slightly increased (Table 10). No chukars or gray partridges were observed on any mitigation site during the summer 1993 surveys. The increase in the number of pheasant and quail sightings was slight and may not be statistically significant. This is probably most true for the quail sightings which were all made at one time on site 18. All the pheasant sightings were made on sites 3 and 5. High counts of 3 to 10 mourning doves were made on all sites surveyed except site 6 which had a high count of 47 (Table 11). Ring-necked pheasants were sighted with some regularity on sites 3 and 5 and mourning doves were regularly sighted on all the surveyed sites (Table 9).

**Table 9: 1993 Summer Upland Game Bird Survey Results**

Site	July	August <sup>1</sup>	August <sup>2</sup>
1	2 mourning doves	1 mourning dove	<b>7 mourning doves</b>
3	<b>8 mourning doves</b> <b>5 pheasants</b>	2 pheasants	2 mourning doves
5	4 mourning doves 3 pheasants	<b>10 mourning doves</b> <b>14 pheasants</b>	2 mourning doves 2 pheasants
6	6 mourning doves	<b>47 mourning doves</b>	10 mourning doves
11	<b>3 mourning doves</b>	3 mourning doves	2 mourning doves
12	<b>6 mourning doves</b>	1 mourning dove	3 mourning doves
15	<b>3 mourning doves</b>	3 mourning doves	2 mourning doves
18	2 mourning doves <b>20 Cal. quail</b>	<b>7 mourning doves</b>	no upland game

<sup>1</sup> first survey in August

<sup>2</sup> second survey in August

Note: high counts for each species per site indicated by bold



**Table 10: Comparison of Summer Densities of Game Birds**

<b>Species</b>	<b>Summer 1987</b>	<b>Summer 1988</b>	<b>Summer 1993</b>
Chukar partridge	144/100 acres	112/100 acres	none
Gray partridge	11/100 acres	32/100 acres	none
Ring-necked pheasant	14/100 acres	15/100 acres	26/100 acres
Ruffed grouse	1/100 acres	1/100 acres	none
California quail	7/100 acres	11/100 acres	28/100 acres
Mourning dove	707/100 acres	261/100 acres	126/100 acres
<b>Total</b>	<b>884/100 acres</b>	<b>432/100 acres</b>	<b>180/100 acres</b>

Table 11: Comparison of Summer Upland Game Bird Survey High Counts

Site	1987 <sup>1</sup>	1988 <sup>2</sup>	1993
1	35 chukars 1 mourning dove	15 chukars 1 mourning dove	7 mourning doves
3	25 chukars 8 gray partridges 165 mourning doves 1 pheasant	3 chukars 16 mourning doves 6 pheasants	8 mourning doves 5 pheasants
5	18 chukars 52 mourning doves 6 pheasants	27 mourning doves 4 pheasants	10 mourning doves 14 pheasants
6	7 chukars 137 mourning doves	6 chukars 5 mourning doves	47 mourning doves
11	13 chukars 14 mourning doves 2 Cal. quail	44 chukars 5 gray partridges 12 mourning doves	3 mourning doves
12	2 chukars 97 mourning doves 1 pheasant	8 chukars 10 gray partridges 57 mourning doves	6 mourning doves
15	3 chukars 19 mourning doves	5 chukars 63 mourning doves 1 pheasant	3 mourning doves
18	1 chukar 24 mourning doves 1 pheasant 3 Cal. quail 1 ruffed grouse	8 gray partridges 24 mourning doves 3 Cal. quail 1 ruffed grouse	7 mourning doves 20 Cal. quail

<sup>1</sup> Shapiro 1987

<sup>2</sup> Shapiro 1989

Results of the winter upland game bird surveys are presented in Table 12. Tables 13 and 14 illustrate comparisons of results from past winter upland game bird surveys with the 1994 survey results. In 1994 there were considerably fewer chukar partridges sighted and significantly more ring-necked pheasants sighted (Table 13). California quail were observed during the 1994 surveys, but were not observed in previous winter surveys. However, as with the summer quail sightings, the quail were observed only one time in one location. There was a slight decrease

in mourning dove sightings. As with the 1988 survey, mourning doves were observed only on site 12 during the winter survey (Table 12). Ring-necked pheasants were sighted consistently and usually in relatively large numbers (compared to other mitigation sites) on site 3 and to a lesser degree on site 5. All other winter sightings were sporadic and unpredictable. Shotgun shell casings were commonly observed on mitigation sites 3 and 5 which could be further indication of higher game bird densities.

**Table 12: 1994 Winter Upland Game Bird Survey Results**

Site	January <sup>1</sup>	January <sup>2</sup>	January <sup>3</sup>
1	<b>3 chukars</b>	no upland game	no upland game
3	<b>72 pheasants</b>	31 pheasants	20 pheasants
5	4 pheasants	<b>12 pheasants</b>	10 pheasants <b>13 Cal. Quail</b>
6	no upland game	no upland game	no upland game
11	<b>3 chukars</b> <b>3 pheasants</b>	no upland game	3 pheasants
12	26 mourning doves	<b>53 mourning doves</b> <b>13 pheasants</b>	1 pheasant
15	no upland game	no upland game	no upland game
18	no upland game	<b>2 pheasants</b>	no upland game

<sup>1</sup> first survey

<sup>2</sup> second survey

<sup>3</sup> third survey

Note: high counts for each species per site indicated by bold

**Table 13: Comparison of Winter Densities of Game Birds**

Species	Winter 1987	Winter 1988	Winter 1994
Chukar partridge	37/100 acres	76/100 acres	8.3/100 acres
Gray partridge	16.5/100 acres	none	none
Ring-necked pheasant	2.8/100 acres	54/100 acres	153.3/100 acres
Ruffed grouse	none	2.8/100 acres	none
California quail	none	none	18.0/100 acres
Mourning dove	none	104/100 acres	73.2/100 acres
Total	55.8/100 acres	236.8/100 acres	252.8/100 acres

**Table 14: Comparison of Winter Upland Game Bird Survey High Counts**

Site	1987 <sup>1</sup>	1988 <sup>2</sup>	1994
1	none	none	3 chukars
3	2 pheasants	9 chukars 33 pheasants	72 pheasants
5	11 chukars	11 chukars	12 pheasants 13 Cal. quail
6	3 chukars	17 chukars	none
11	13 chukars	none	3 pheasants 3 chukars
12	12 gray partridges	75 mourning doves 6 pheasants	13 pheasants 53 mourning doves
15	none	7 chukars	none
18	2 partridges 1 pheasant 1 ruffed grouse 3 Cal. quail 24 mourning doves	7 chukars 2 ruffed grouse	2 pheasants

<sup>1</sup> Shapiro 1987

<sup>2</sup> Shapiro 1989

**Other Wildlife Observations.** A total of 65 species of birds were documented during the breeding season through casual observations in the vicinity of Rufus Woods Lake (Appendix D). Of these, 62 species were documented on or along the immediate shoreline of the 12 mitigation sites (1, 3, 5, 6, 7, 9, 11, 12, 15, 18, 19, and 20) visited during other surveys. Fourteen species (mourning dove, northern flicker, eastern kingbird, cliff and northern rough-winged swallows, American robin, cedar waxwing, yellow warbler, western meadowlark, red-winged and Brewer's blackbirds, northern oriole, western tanager, and American goldfinch) were commonly observed on the irrigated sites during the breeding season. In contrast only four species (mourning dove, eastern kingbird, western meadowlark, and Brewer's blackbird) were commonly observed birds on non-irrigated sites during the breeding season. Other noteworthy species observed on mitigation sites during the breeding season include black-crowned night heron (juvenile) on site 12, Lewis woodpecker on site 20, loggerhead shrike on sites 1, 3, 6, and 11, warbling vireo on sites 1 and 11, MacGillivray's warbler on sites 1 and 5, yellow-breasted chat on sites 18, 3, 5, and 12, and a lazuli bunting on site 15.

Bald and golden eagles, osprey, red-tailed hawk, and American kestrel were all observed perching on raptor poles at various times and locations. Bald eagles were observed primarily upstream from RM 580 (near the confluence of the Nespelem River) during the breeding season. One active bald eagle nest was observed on the south shore at about RM 582. Wintering bald eagles were not concentrated in any particular portion of the reservoir. Two golden eagle nests were observed one at RM 553 and one at RM 588. One active osprey nest was present in a snag near the shoreline at site 18 and one active red-tailed hawk nest was located in a ponderosa pine along the shoreline near the west end of site 20. Other raptors observed include northern harrier, turkey vulture, great-horned owl, and barn owl.

Observations of 79 different bird species were made throughout the year in the vicinity of Rufus Woods Lake. Mitigation site 12 (irrigated) had the highest number (37) of bird species observed (Appendix D), followed by site 5 (irrigated) with 34, site 18 (non-irrigated) with 31, site 11 (irrigated) with 29, site 3 (irrigated) with 28, site 1 (irrigated) with 23, and site 7 (non-irrigated) with 20. The remaining irrigated site (site 15) and four non-irrigated sites (sites 6, 9, 19 and 20) had under 20 bird species documented during this study.

During the 1987 study, a high count of 29 bird species occurred on site 18 (Shapiro 1987). During the 1987 and 1989 studies conducted by Shapiro, more time was spent on the mitigation sites because transects were set up, and more wildlife studies were conducted; therefore, more time was available to making bird observations. If this is true, the casual observations from this study indicate a trend toward more species use on the irrigated sites. These results must be considered with caution since these were not controlled surveys, but rather casual observations with varying levels of intensity between sites.

A total of 13 mammal species were observed, or their sign was detected, in the vicinity of Rufus Woods Lake (Appendix E). Ten species were documented on non-irrigated sites and nine on irrigated sites. Coyote, mule deer, and vole were the most common mammals documented and evidence of their presence occurs on nearly all the mitigation sites visited during this study. Badger sign was observed on five sites (7, 18, 20, 3, and 12). Black bear sign was documented on five sites (18, 20, 3, 5, and 12) and a sow and cub were observed on the north bank adjacent to Lone Pine Island at RM 559. Beaver and their sign were observed on sites 18 and 20, and

evidence of beaver presence was observed on irrigated sites 3 and 5. The beaver have felled numerous mitigation trees, often the largest trees, on sites 3 and 5. Other wildlife damage to mitigation plantings was caused by porcupines. Porcupines were observed on sites 11 and 18 and evidence of porcupines was observed on site 15. On the irrigated sites (11 and 15) porcupines have stripped the bark from portions of numerous mitigation trees, primarily ponderosa pine and Russian olive.

Western rattlesnakes were observed on non-irrigated sites 6 and 18. Racers were seen on sites 6 and 7 (non-irrigated) and site 11 (irrigated).

## CONCLUSIONS

### Vegetation

**Irrigated Sites.** The overall average canopy coverage of trees and shrubs on the irrigated sites is 55.3 percent, 30.3 percent greater than the mitigation goal of 25 percent canopy coverage at plant maturity (10-20 years for shrubs and longer for trees). These results indicate that the overall coverage goal has been achieved ahead of schedule, as predicted by Shapiro and Associates (1989). Each individual irrigated site also has an average canopy coverage greater than the 25 percent goal, but 10 transects on site 11 and one transect on site 15 were below 25 percent coverage. These transects probably are representative of the past overbrowsing by deer that took place on these sites. The fencing that has been erected to keep deer out appears to be effective in reducing deer browsing on these sites considering the substantial increase in coverage since the last monitoring, however, deer were observed on both sites during this monitoring period.

Because of the shearing effect of the sprinklers, the taller growing trees such as ponderosa pine, may not be able to achieve their natural height and structure. Such restrictions in growth may eliminate the potential for these normally taller growing trees to provide suitable habitat for species that rely on such structure (e.g. nest and perch sites for raptors, foraging and nest sites for woodpeckers and other cavity nesting birds).

Overall forb/grass cover is 101.4 percent for the irrigated sites. This is an increase of 30.8 percent since the last survey. Bare ground typically only occurs in shaded areas below dense shrubs and trees which are common along most transects. The forb/grass establishment on the irrigated sites has established successfully on all sites. Invasive herbaceous weeds such as sweet clover and mullein are the only concern related to groundcover on the irrigated sites. Other invasive weeds, primarily Himalayan blackberry, could significantly limit the spread of mitigation plants and even eradicate them in some areas. Himalayan blackberries have established most at sites 1 and 12.

**Non-irrigated Sites.** Shrub and tree growth along all non-irrigated transects increased since the last monitoring. Increases at fenced sites were not significantly greater than at unfenced control sites. However, the influence of cattle is apparent on riparian transects R-1 and R-2 at site 20 where shrub and tree foliage is virtually non-existent below four to five feet height, but the survey results did not detect such influences by domestic stock. The remaining control (unfenced) riparian sites typically occur on steep gradients or have steep sided channels that appear to be largely inaccessible to cattle, which could be why significant differences are not detectable in the native riparian shrub and tree survey results.

The average cover of forb/grass species along non-irrigated transects indicates only a slight difference between fenced and unfenced sites. Average forb/grass cover is 82.0 percent at fenced sites, compared to 74.5 percent at unfenced non-irrigated sites. Since cattle are grazers and not browsers, it is logical that the herbaceous coverage is less on the unfenced sites, although this slight difference suggests only minor benefits from fencing. Livestock use may be light in the unfenced areas, which would explain this slight difference in herbaceous coverage. Furthermore,

no significant difference in species composition is notable along the forb/grass transects and cheatgrass is the dominant species on all fenced and unfenced bitterbrush and big sage transects. Perhaps more time is needed before significant differences between fenced and unfenced non-irrigated sites are detected in the herb/grass vegetative layer.

**Deer Browse Utilization.** On a site-to-site comparison of fall survey results for deer browse utilization, the non-irrigated riparian and bitterbrush sites received the most browse, thus indicating greater deer use in these areas. Compared to the fall results, the spring results were substantially lower on all sites. The bitterbrush transects had the highest level of spring browse. Bitterbrush, red-osier dogwood, black hawthorn, and western serviceberry had the highest levels of browse overall.

Conclusions from these comparisons of deer browse could be misleading for a number of reasons. Annual fluctuations of deer populations would likely result in a change in the level of deer browse at a particular site, but the site may be equally attractive (or-unattractive) to deer for browsing. The WDFW estimated a 30 to 35 percent winter kill of deer in the Chief Joseph area in 1992/1993. Climate, as it affects vegetative growth and nutrition of individual plant species, could also cause a shift in deer browse preference. Also, shrubs at many of the twig points appear inaccessible to deer due to dense surrounding growth.

Many possible inaccuracies in survey results could occur from the browse survey methods used. The methods used to evaluate browse use do not take into consideration a change in browse availability, and thus render incomparable results between survey years. For example: more browse could take place on a given site in one year than a previous year, but if there is a greater amount of browse available due to increased plant growth, the ratio of browsed twigs to unbrowsed twigs could be lower than in the previous study. A direct comparison of browse ratios between seasons or survey years is only meaningful if there are equal amounts of available browse during each survey. Given the substantial increase in shrub and tree canopy coverage on the irrigated sites, this skewing of results could likely have occurred on those sites.

The spring browse survey results could be further affected resulting from the difficulty of detecting browse on some plants during that time of year. Because smooth sumac and blue elderberry shed their leaves and only relatively large woody stems remain it is unlikely that these species offer much potential browse in that condition and it is not possible to detect browse that was evident in the fall. This also occurs on any plants that portions (such as limbs) die off over the winter. Common snowberry is particularly difficult in determining browse in the spring because the end twigs are fine and brittle and difficult to determine if they are dead or alive, or browsed or broken. The currant were sprouting leaves and buds at the time of the survey in mid-March which creates further inaccuracies when calculating winter browse. The sample sizes for smooth sumac, currant, and blue elderberry were probably too low to be statistically significant.

Because of the numerous variables that could affect the browse survey results, an accurate quantitative comparison of browse utilization is probably not possible. The results probably best indicate that the mitigation sites are providing browse for deer, and that deer browsing occurs throughout the year.



## **Wildlife**

**Mule Deer Fawn Surveys.** Because of the small sample size (two or less) of fawns counted on all sites but site 7 during the 1987, 1988, and 1993 surveys, these results are probably not comparable. Additionally, sites 6, 15, 18, and 20 were surveyed during only one of the three survey years. Fewer fawns were sighted on site 7 during the 1993 survey than in the 1987 and 1988 surveys. Assuming that the habitat quality has not significantly degraded in any way on site 7 (the vegetation monitoring does not indicate significant degradation), other reasons for lower numbers of fawns on the site could be in effect. Unseasonably cool summer weather could have influenced the deer presence during the fawn surveys. The deer may not have relied on the riparian areas as much as during a typically warmer and drier summer and as a result may not have been as concentrated along Rufus Woods Lake. Also, a natural fluctuation in the mule deer population could have resulted in fewer deer in the project vicinity. As stated above, the WDFW estimated a 30 to 35 percent winter kill of deer in the Chief Joseph area in 1992/1993. Since the duration of surveys on each site were not reported by Shapiro (1987 and 1989), the level of effort between study years may not have been consistent. Also, observer differences could have contributed to different deer counts.

**Upland Game Bird Surveys.** The upland game bird surveys suggest a trend toward fewer chukar partridge and more ring-necked pheasant occupying the mitigation sites. Pheasant presence is apparently increasing on the irrigated sites, especially sites 3 and 5. Chukar observations declined on all sites except site 1 during the winter survey. The apparent chukar decline on the irrigated sites could be attributed to the conversion of rocky, grassy, and brushy arid slopes (chukar habitat) to riparian habitat. The chukar decline and pheasant increase on the irrigated sites may be an indication that the creation of simulated riparian habitat is being accomplished. Estimated summer densities of mourning doves declined in 1993 which could be due to natural population decline or changing habitat conditions. The estimated densities for the remaining upland game birds (California quail, ruffed grouse, and gray partridge) are either too low or the density differences between monitoring years are too minor to make any conclusions about population trends.

In general, lower than expected game bird detections probably occurred on the irrigated sites due to vegetation structure. The substantial increase in tree and shrub growth on the irrigated sites over past survey years impeded game bird detection at some times during this survey. The vegetation is so dense in many areas that it was difficult to follow the established survey transects. The dense and tall vegetation often made it difficult to spot, identify, and count flushed birds. Missed sightings are also suspected to have occurred as a result of the dense, short vegetation. In many locations the dense shrub vegetation noticeably restricted dog movement, thus resulting in a smaller survey area and fewer sightings.

**Other Wildlife.** The irrigated mitigation sites appear to be providing habitat during the breeding season for a wider variety of non-game birds than in previous years. Although no specific goals were established for non-game birds, the mitigation sites appear to have created suitable habitat conditions for many species associated with riparian habitats. Mammal species identified on the mitigation sites are generally the same as identified during the 1989 study (Shapiro).

## RECOMMENDATIONS

### Vegetation

Since the mitigation plants at the irrigated sites have prematurely accomplished the canopy coverage goal, no significant modifications to the maintenance and operation of these areas are warranted. Only the periodic removal of Himalayan blackberry and other invasive weeds are recommended to prevent the reduction of mitigation plant diversity and cover.

### Wildlife

Because wildlife populations are dynamic and continually fluctuate, and because the mitigation surveys are scheduled to be conducted only once every five years, a long-term approach should be incorporated when evaluating wildlife use at the mitigation sites. Determination of mitigation success/failure should not be based on results from a single monitoring season. Results from several monitoring seasons should be evaluated to identify wildlife presence and use trends on mitigation sites. Also, the following modifications or changes in wildlife survey methodologies should be considered.

The adoption of a different browse utilization methodology is recommended to eliminate the incomparable results that occur when vegetation growth (browse availability) substantially changes. A technique may be able to be developed that factors in the vegetation monitoring data and correlates it to the browse results to get a relative amount of browse per site rather than a percent of available twigs browsed.

Also, common snowberry, smooth sumac, currant, and blue elderberry could be eliminated from the browse survey because these species yield less reliable results than the other monitored shrubs due to their low sampling frequency and difficulty in detecting browse on these plants, especially in the spring. Only the more prevalent species with the most reliable detection of browse that receive the greatest level of deer use (red-osier dogwood, bitterbrush, western serviceberry, Wood's rose, and possibly black hawthorn) should be surveyed for browse. By surveying these species only once in the early spring to determine relative levels of browse for an entire year, results would be more accurate and monitoring costs would be reduced.

As suggested by Shapiro (1989), transect locations for future upland game bird surveys on the irrigated sites should be rerouted through areas that can be accessed by future surveyors. The new transect alignments should be the same length as the present transects so that equal areas are surveyed. Although this should help keep the area surveyed equal, the possibility of missed sightings is expected to continually increase as the plants mature.

The duration of mule deer fawn survey site visits should be specified to enable consistent levels of effort in surveys. Mule deer fawn survey techniques should also be standardized so that the same methods are used during each monitoring season.

Since a relatively large number of species of non-game birds are associated with all habitat types in the project vicinity, their presence is a good indicator of the quality of a given habitat. The

casual survey results suggest that non-game birds are increasing on the irrigated mitigation sites. Non-game bird surveys could be incorporated into the monitoring program to provide comparative indices of non-game bird use on the mitigation sites. Timed bird censuses conducted during the nesting season could be performed at random points, in all habitat types, on each site. This would eliminate the bias caused from casual observations when unequal time is spent on different sites and could provide another quantitative index to evaluate mitigation success.

## SUMMARY

Given the results of the vegetation, summer deer browse, and winter upland game bird surveys, and non-game observations, DEA feels that the mitigation goals are being met. The objectives for the mitigation program established in DM 52 have apparently been achieved. The plantings are generally in good health and have grown faster than expected. Overall tree and shrub vegetation coverage easily exceeds the goal of 25 percent. The mitigation project appears to have successfully provided roughly 100 acres of artificial riparian habitat that are being utilized by a variety of wildlife species.

Evidence of use by a variety of wildlife was consistently observed through casual observations. Although results from mule deer fawn surveys and summer upland game bird surveys were lower than in previous years, winter upland game bird results generally increased and browse results were comparable to previous surveys. The need to fence sites 11 and 15 to exclude deer is further evidence that the irrigated sites are attracting wildlife.

Numerous factors such as population fluctuations, climate variations, methodology limitations, and monitoring inconsistencies are likely reasons for inconsistent or inaccurate results. By evaluating the mitigation project's success over the long-term, short-term downward fluctuations in wildlife populations will likely be "averaged out" over time. Modifications to sampling or analysis techniques would likely eliminate much of the potential bias in survey results for deer browse and upland game birds. The eagle, raptor pole, and Canada goose brooding surveys were done by others and results are not included in this report; the evaluation of overall mitigation success must necessarily include these results as well as the results presented in this report.

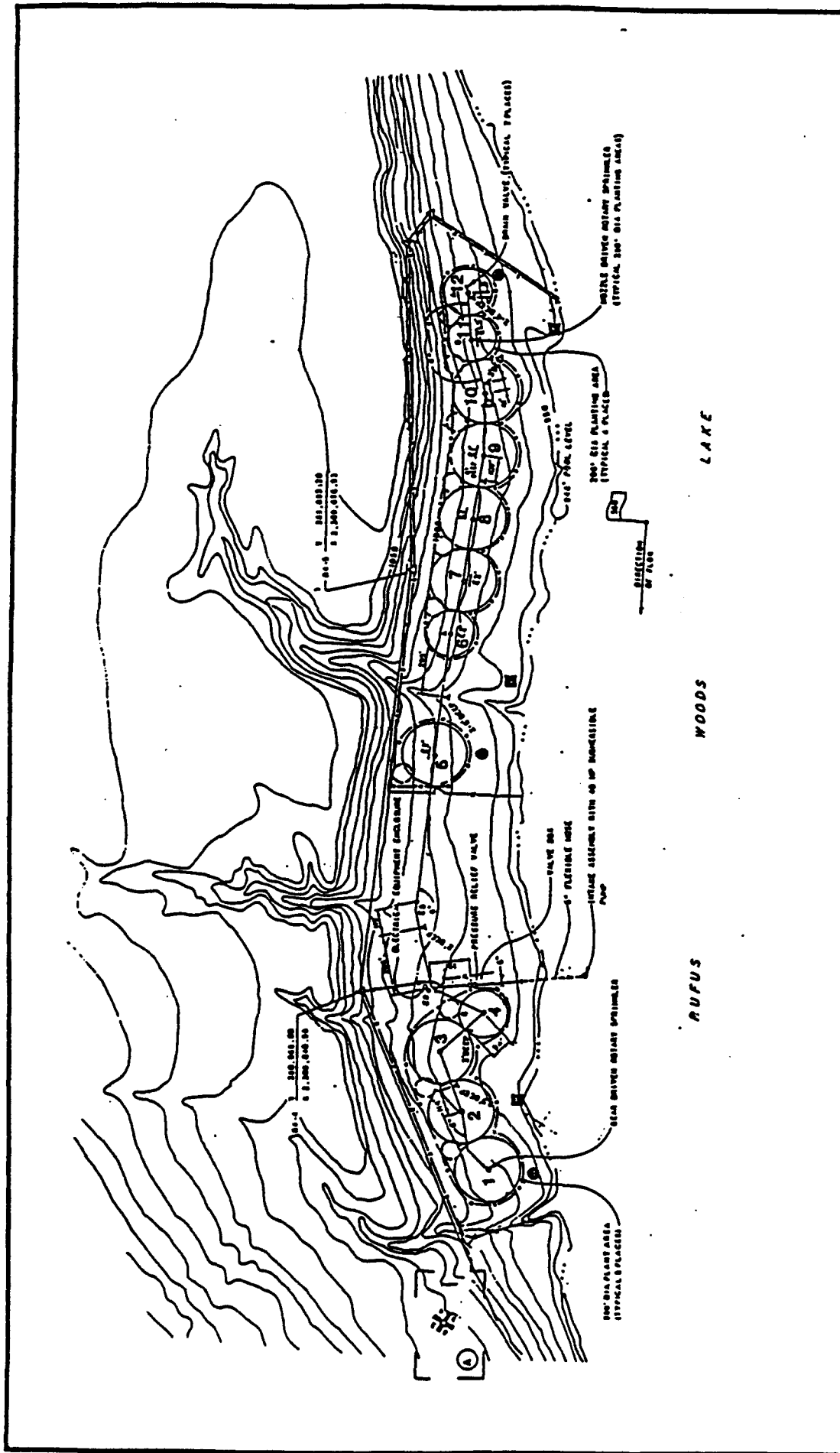
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## APPENDICES

**APPENDIX A**  
**Mitigation Site Maps**





**A-2**

**Site No. 3 - Wells Flat**

**Vegetation Transect Location**

U.S. Army Corps of Engineers

SHAPIRO & ASSOCIATES

**TRANSECT DEGREES LENGTH TWO POINT**

1	2	3	4	5	6	7	8	9	10	11	12
140	30	80	80	140	70	320	180	240	380	80	280
100	160	150	100	180	100	150	140	150	380	100	100
66	42	62	67	84	90	84	28	38	71	16	87

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Scale in Feet

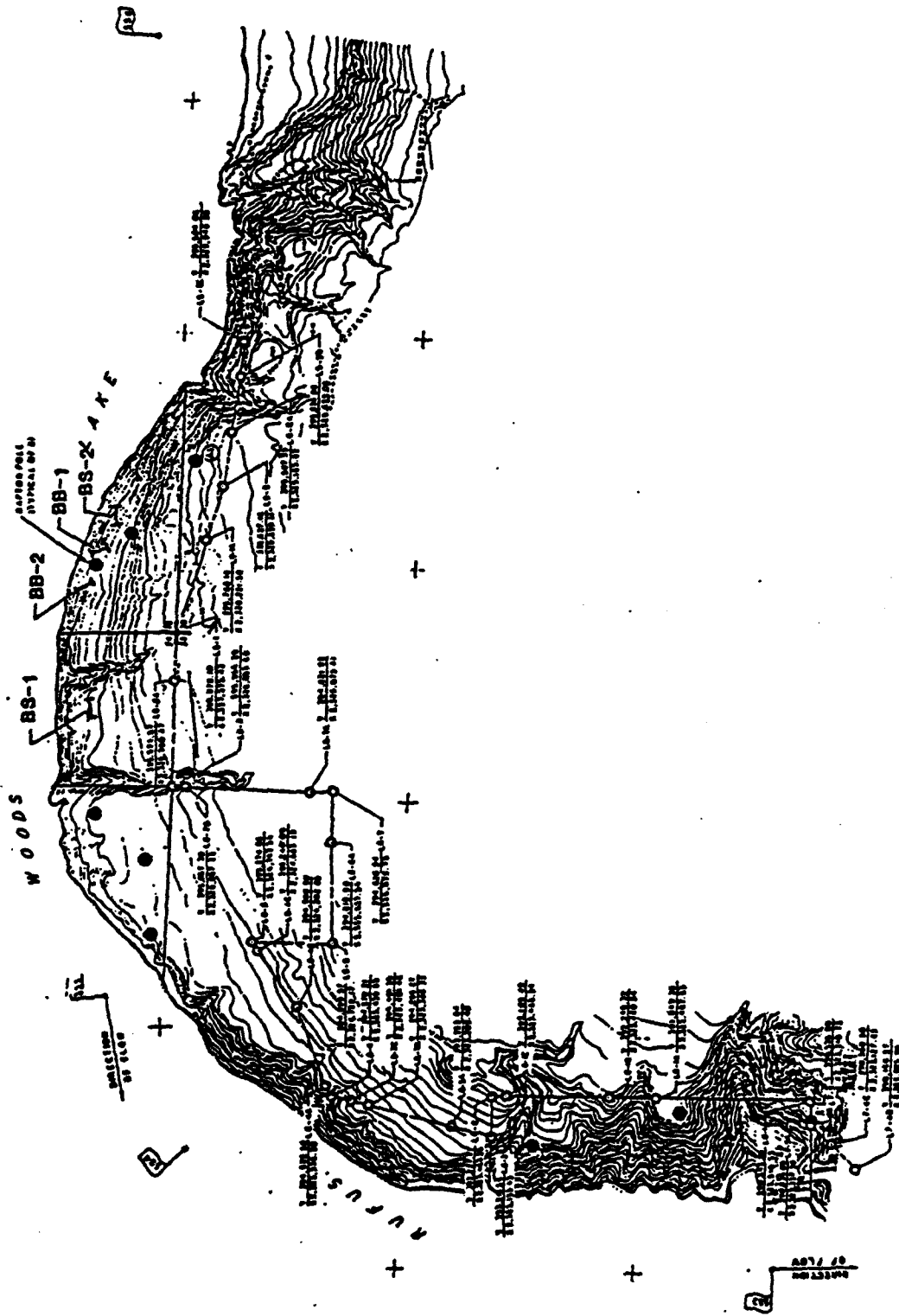
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**U.S. Army Corps of Engineers**

**SALVAFOS  
PHARM**



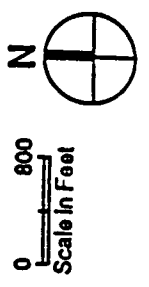
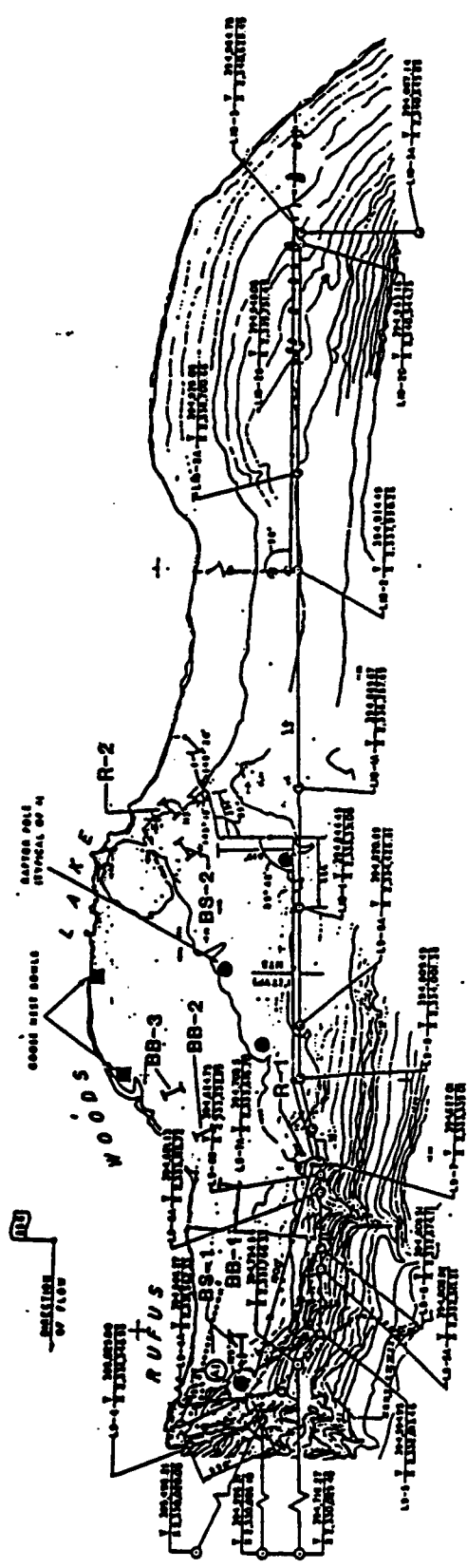
TRANSECT	DEGREES	LENGTH	TWO POINT
BS-1	140	100	91
BS-2	320	100	95
BB-1	260	100	
BB-2	60	100	

A-4

# Site No. 6 - China Knoll Vegetation Transect Location

U.S. Army Corps of Engineers

SHAPIRO &  
ASSOCIATES



TRANSECT	DEGREES	LENGTH	TWO POINT
BB-1	200	100	74
BB-2	130	100	73
BB-3	110	100	82
BS-1	120	100	
BS-2	70	100	
R-1	140	100	24.63
R-2	230	100	7.41

A-5

# Site No. 7 - Box Canyon Vegetation Transect Location

U.S. Army Corps of Engineers

SLATKIN &  
ASSOCIATES





0 400  
Scale in Feet

SHAPIRO &  
ASSOCIATES

**Site No. 11- Allen Bar  
Vegetation Transect Location**

**U.S. Army Corps of Engineers**



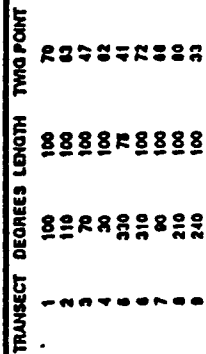
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Scale in Feet

	TRANSECT	DEGREES	LENGTH	TWO POINT.	TRANSECT	DEGREES	LENGTH	TWO POINT
1	100		100	90	0	100	100	10
2	350		100	48	10	210	100	68
3	20		100	68	11	100	100	77
4	280		100	34	12	320	100	84
5	180		100	37	13	260	100	13
6	0		320	100	14	270	100	38
7	180		100	20	15	240	100	87
8	160		100	18				

**Site No. 12 - Timm's Ranch  
Vegetation Transect Location**

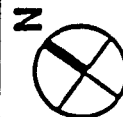
**U.S. Army Corps of Engineers**

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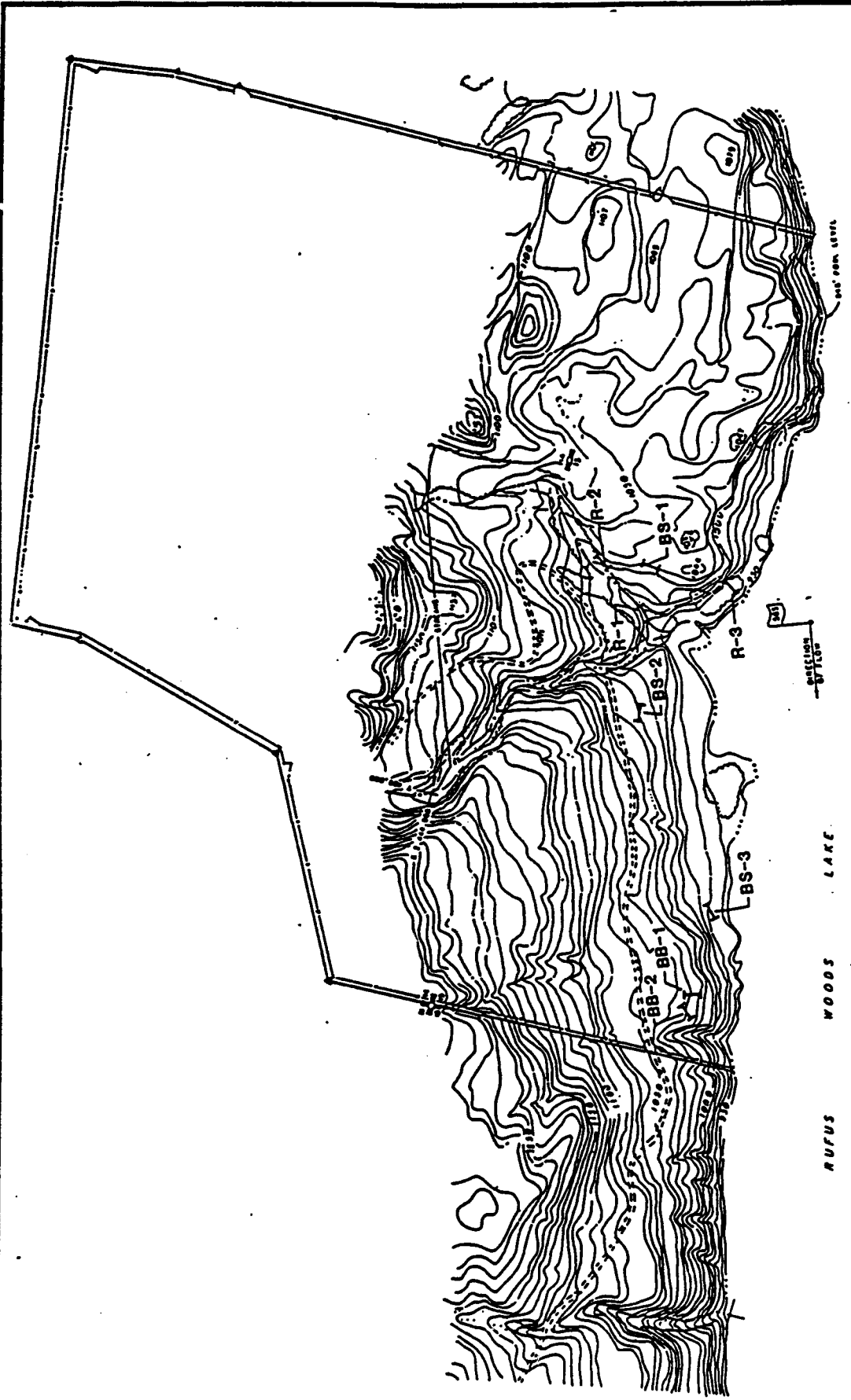
# Site No. 15 - Alameda Flat Vegetation Transect Location

**U.S. Army Corps of Engineers**



0 400  
Scale in Feet

3:57 PM '85  
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TRANSECT	DEGREES	LENGTH	THIRD POINT
BB-1	70	100	86
BB-2	130	100	72
BS-1	230	100	33
BS-2	130	100	16.61
BS-3	140	100	10.97
R-1	90	100	36.64
R-2	140	100	
R-3	180	100	

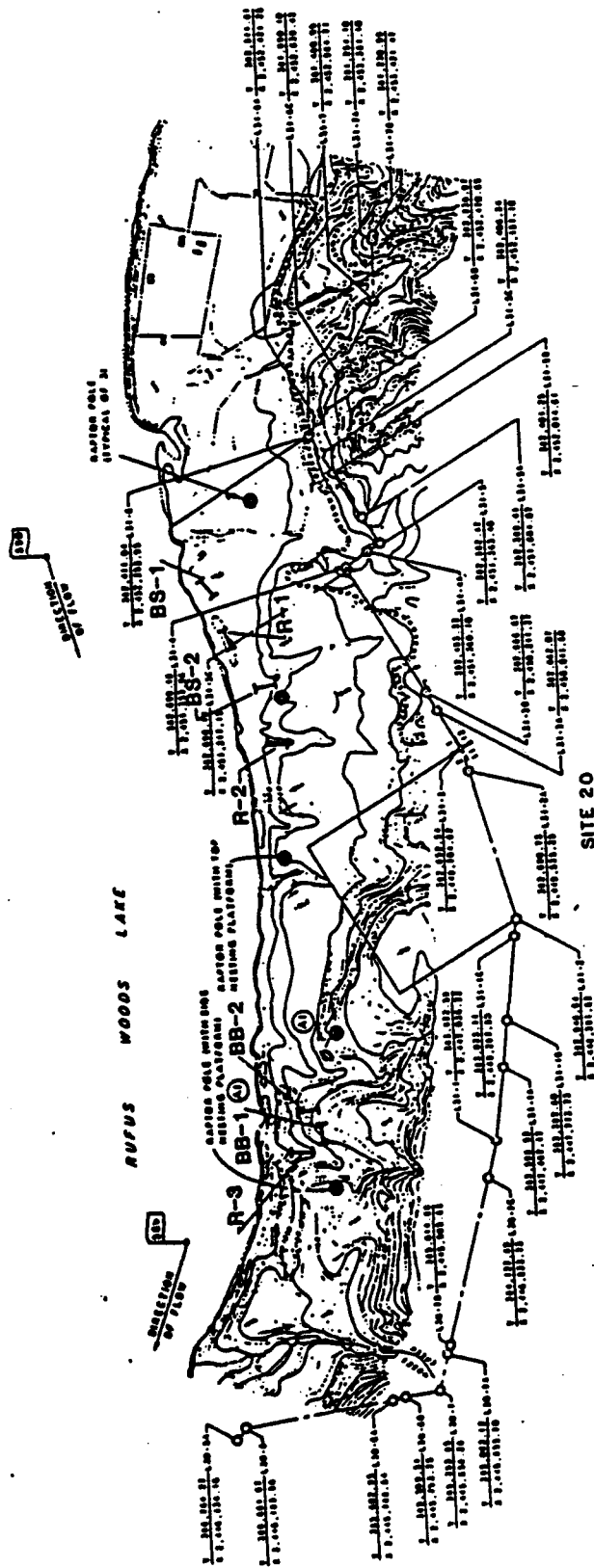
**A-10**

**Site No. 18 - Baily Basin  
Vegetation Transect Location**

U.S. Army Corps of Engineers

SHAPIRO &  
ASSOCIATES





A-11

# Site No. 20 - Sanderson Creek Vegetation Transect Location

U.S. Army Corps of Engineers

TRANSECT	DEGREES	LENGTH	TWIG POINT
BS-1	70	100	44
BS-2	150	100	49
BS-1	250	100	47
BS-2	40	100	4
R-1	290	100	7, 76
R-2	220	100	6, 80
R-3	200	100	8, 80

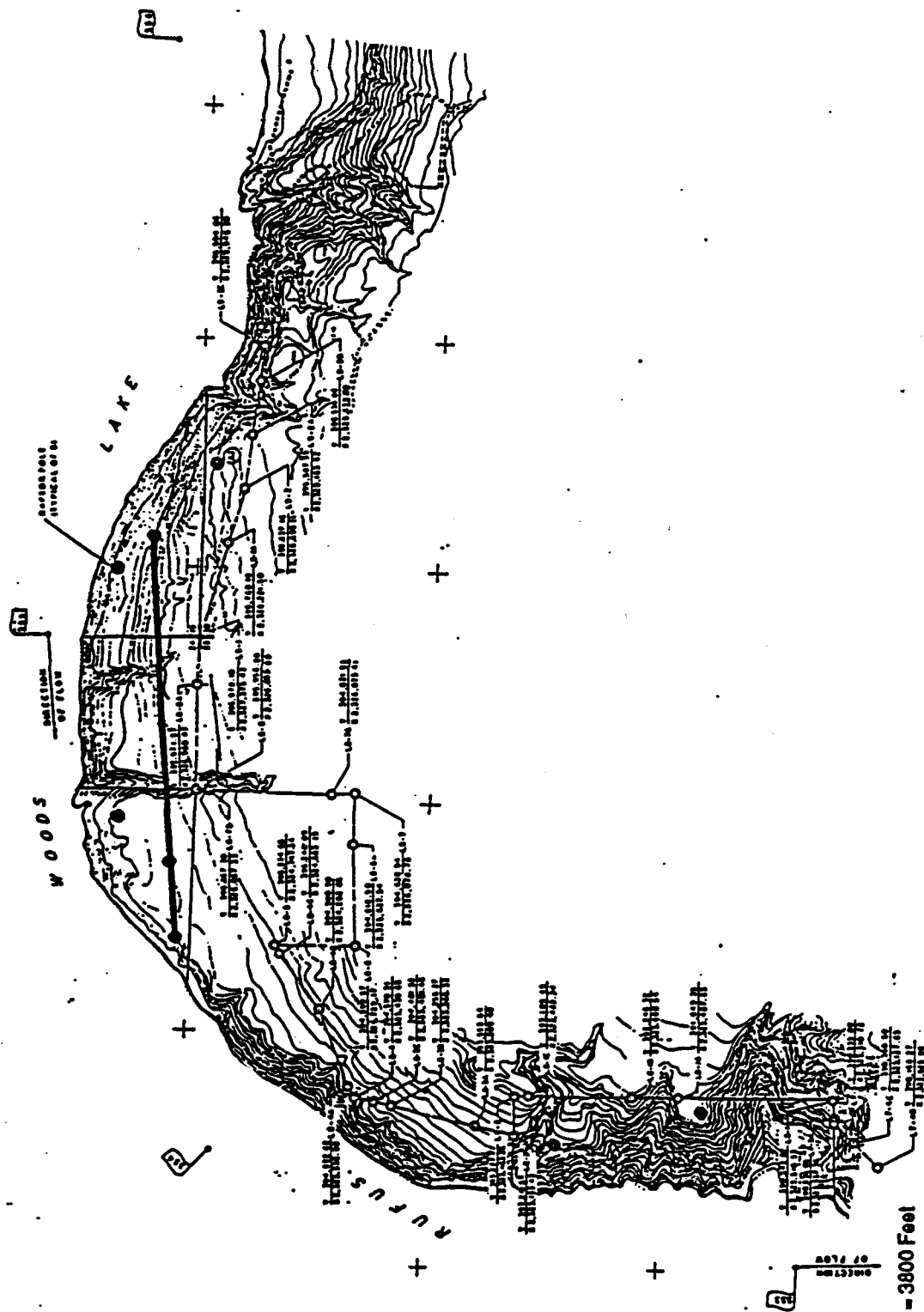
SHAPIRO &  
ASSOCIATES

**APPENDIX B**  
**Upland Game Bird Survey Transect Locations**



SHAPIRO &  
ASSOCIATES, INC.





Transect Length = 3800 Feet

B-4

Site No. 6 - China Knoll  
Upland Game Bird Transect Location

U.S. Army Corps of Engineers

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Scale in Feet

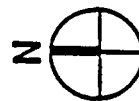


SHAPIRO &  
ASSOCIATES



**Site No. 11 - Allen Bar  
Upland Game Bird Transect Location**

**U.S. Army Corps of Engineers**

SHAPIRO &  
ASSOCIATES

**Transect Length = 4100 Feet**

**B-6**

**Site No. 12 - Timm's Ranch  
Upland Game Bird Transect Location**

**U.S. Army Corps of Engineers**



0 400  
Scale in Feet

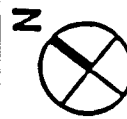




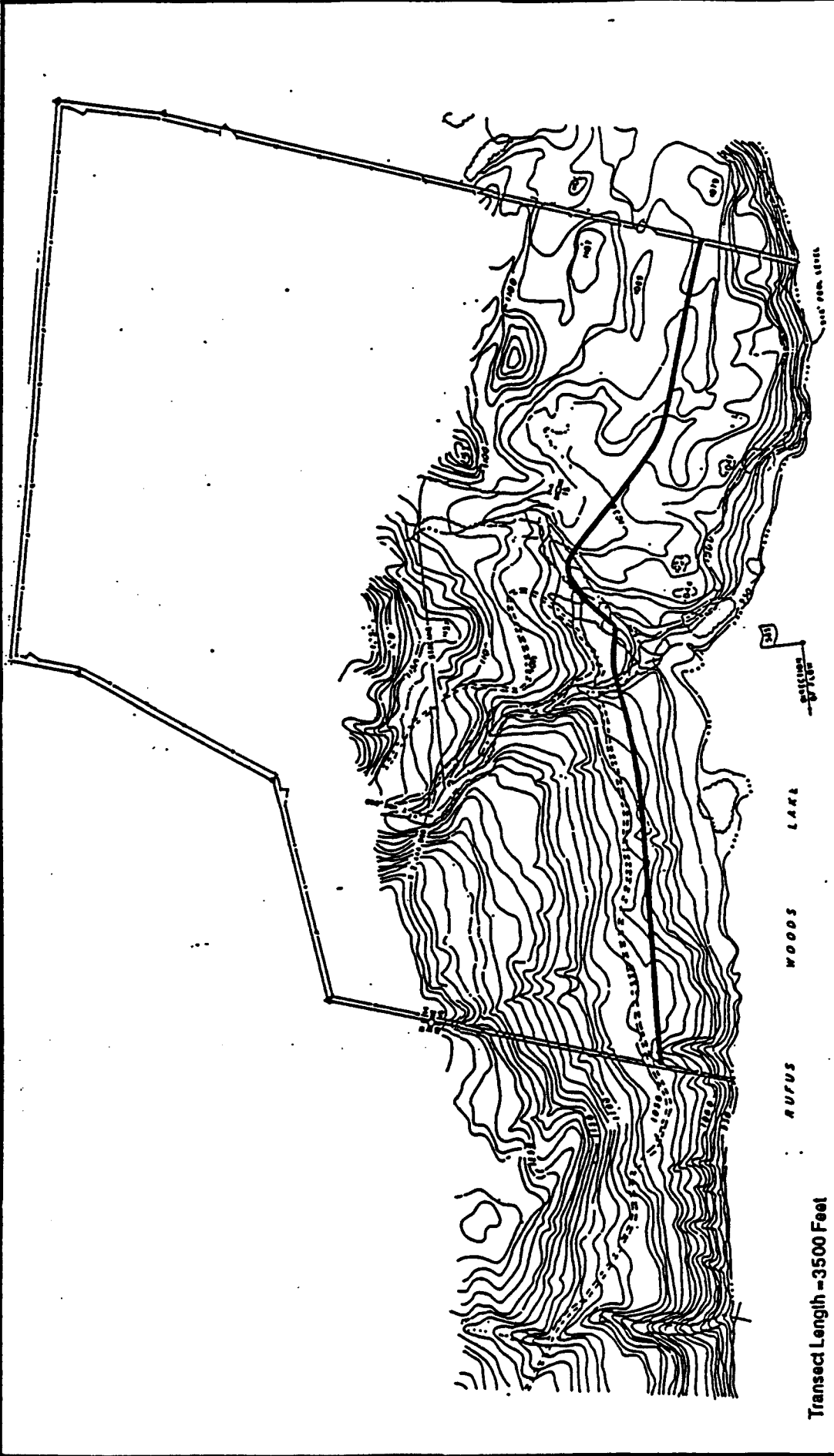
**Site No. 15 - Alameda Flat  
Upland Game Bird Transect Location**

**U.S. Army Corps of Engineers**

**STANLEY ASSOCIATES**

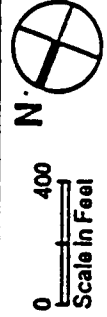


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Scale in Feet



Transect Length - 3500 Feet

**B-8**  
**Site No. 18 - Bailey Basin**  
**Upland Game Bird Transect Location**  
**U.S. Army Corps of Engineers**



SHAPIRO & ASSOCIATES

**APPENDIX C**  
**PLANT SPECIES IDENTIFIED ON**  
**THE CHIEF JOSEPH WILDLIFE MITIGATION MONITORING SITES**

CODE	SCIENTIFIC NAME	COMMON NAME	FAMILY	HABITAT
<b>Trees and Shrubs</b>				
AMAL	<i>Amelanchier alnifolia</i>	serviceberry	ROSACEAE	R, Irr. Site
ARTR	<i>Artemisia tridentata</i>	big sagebrush	COMPOSITAE	BS, BB, R
BOC	<i>Betula occidentalis</i>	water birch	BETULACEAE	R, Irr. Sites
CAAR	<i>Caragana arborescens</i>	pea shrub	LEGUMINOSAE	Irr. Sites
CHNA	<i>Chrysothamnus nauseosus</i>	rabbitbrush	COMPOSITAE	BS, BB
CHVI	<i>Chrysothamnus viscidiflorus</i>	green rabbitbrush	COMPOSITAE	BS, BB
CLLI	<i>Clematis ligusticifolia</i>	western clematis	RANUNCULACEAE	R, Irr. Site
COST	<i>Cornus stolonifera</i>	red-osier dogwood	CORNACEAE	R, Irr. Site
CRCO	<i>Crataegus columbiana</i>	Columbia hawthorn	ROSACEAE	R
CRDO	<i>Crataegus douglasii</i>	black hawthorn	ROSACEAE	Irr. Sites
ELAN	<i>Elaeagnus angustifolia</i>	Russian olive	ELAEAGNACEAE	Irr. Site, occ R
JUSC	<i>Juniperus scopulorum</i>	Rocky Mt. juniper	CUPRESSACEAE	Irr. Site
LEPU	<i>Leptodactylon pungens</i>	prickly phlox	POLEMONIACEAE	Irr. Site, BS, BB
PHLE	<i>Philadelphus lewisii</i>	mock orange	HYDRANGEACEAE	R, BS, BB, Irr. Site
PIPU	<i>Picea pungens</i>	Colorado blue spruce	PINACEAE	Irr. Site
PIPO	<i>Pinus ponderosa</i>	ponderosa pine	PINACEAE	BS, BB, R, Irr. Sites
POBA	<i>Populus balsamifera</i>	cottonwood	SALICACEAE	Irr. Site
POTR	<i>Populus tremuloides</i>	quaking aspen	SALICACEAE	Irr. Site
PRVI	<i>Prunus virginiana</i>	chokecherry	ROSACEAE	Irr. Site
PSME	<i>Pseudotsuga menziesii</i>	Douglas fir	PINACEAE	R
PUTR	<i>Purshia tridentata</i>	bitterbrush	ROSACEAE	BS, BB, R
RHGL	<i>Rhus glabra</i>	smooth sumac	ANACARDIACEAE	Irr. Sites, R
RHTR	<i>Rhus trilobata</i>	squaw bush	ANACARDIACEAE	Irr. Sites
RIAR	<i>Ribes aureum</i>	golden currant	GROSSULARIACEAE	Irr. Sites
RICE	<i>Ribes cereum</i>	squaw currant	GROSSULARIACEAE	BS, BB
ROPS	<i>Robinia pseudoacacia</i>	black locust	LEGUMINOSAE	Irr. Site
ROWO	<i>Rosa woodsii</i>	Wood's rose	ROSACEAE	Irr. Site
RUDI	<i>Rubus discolor</i>	Himalayan blackberry	ROSACEAE	Irr. Site
SA	<i>Salix sp.</i>	willow	SALICACEAE	Irr. Site, occ R
SADO	<i>Salvia dorrii</i>	gray ball sage	LABIATAE	R BS
SACE	<i>Sambucus cerulea</i>	blue elderberry	CAPRIFOLIACEAE	Irr. Site
SAVE	<i>Sarcobatus vermiculatus</i>	black greasewood	CHENOPODIACEAE	R, BS, BB
SHCA	<i>Shepherdia canadensis</i>	buffalo-berry	ELAEAGNACEAE	Irr. Sites
SYAL	<i>Symphoricarpos albus</i>	snowberry	CAPRIFOLIACEAE	Irr. Site
TECA	<i>Tetradymia canescens</i>	horsebrush	COMPOSITAE	BS, BB

<b>Herbs and Forbs</b>				
AGHE	<i>Agoseris heterophylla</i>	annual agoseris	COMPOSITAE	BS, BB, R
AMLY	<i>Amsinckia lycopoides</i>	fiddleneck	BORAGINACEAE	BS, BB
ARCA	<i>Arenaria capillaris</i>	mountain sandwort	CARYOPHYLLACEAE	BS, BB
ASSP	<i>Asclepias speciosa</i>	milkweed	ASCLEPIADACEAE	BS, BB
BASA	<i>Balsamorhiza sagittata</i>	balsamroot	COMPOSITAE	BS, BB
CA	<i>Carex spp.</i>	sedge	CYPERACEAE	shorelines
CASH	<i>Carex sheldonii</i>	sedge	CYPERACEAE	shoreline
CAFI	<i>Carex filifolia</i>	sedge	CYPERACEAE	BS, BB
CATH	<i>Castilleja thompsonii</i>	Thompson's paintbrush	SCROPHULARIACEAE	BS, BB
CEVU	<i>Cerastium vulgatum</i>	chickweed	CARYOPHYLLACEAE	BS, BB
CHDO	<i>Chaenactis douglasii</i>	hoary chaenactis	COMPOSITAE	BS, BB

**APPENDIX C - continued**  
**PLANT SPECIES IDENTIFIED ON**  
**THE CHIEF JOSEPH WILDLIFE MITIGATION MONITORING SITES**

CODE	SCIENTIFIC NAME	COMMON NAME	FAMILY	HABITAT
<b>Herbs and Forbs - continued</b>				
CHAL	<i>Chenopodium album</i>	goosefoot	CHENOPODIACEAE	Irr. Site
CIAR	<i>Cirsium arvense</i>	Canada thistle	COMPOSITAE	Irr. Sites
CI	<i>Cirsium</i> spp.	thistle	COMPOSITAE	BS, BB, R
COPA	<i>Collinsia parviflora</i> (?)	blue-eyed mary	SCROPHULARIACEAE	BS, BB
COLI	<i>Collomia linearis</i>	narrow-leaf collomia	POLEMONIACEAE	BS, BB
CRAT	<i>Crepis atrabarba</i>	hawksbeard	COMPOSITAE	BS, BB, Irr Sites
DISY	<i>Dipsacus sylvestris</i>	teasel	DIPSACACEAE	Irr. Sites
EQLA	<i>Equisetum laevigatum</i>	scouring rush, horsetail	EQUISETACEAE	BS, BB, moist areas in shore
ERFI	<i>Erigeron filifolius</i>	thread-leaf fleabane, erigeron	COMPOSITAE	BS, BB, dry sites
ERPU	<i>Erigeron pumilus</i>	shaggy fleabane, erigeron	COMPOSITAE	BS, BB
ERHE	<i>Eriogonum heracleoides</i>	Wyeth buckwheat	POLYGONACEAE	BS, BB
ERNI	<i>Eriogonum niveum</i>	snow buckwheat	POLYGONACEAE	BS, BB
FRPU	<i>Fritillaria pudica</i>	fritillary	LILIACEAE	BS, BB
GAAR	<i>Gaillardia aristata</i>	gaillardia	COMPOSITAE	BS, BB
GAAP	<i>Galium aparine</i>	bedstraw	RUBIACEAE	Irr. Site
GABO	<i>Galium boreale</i>	Northern bedstraw	RUBIACEAE	Irr. Site, BS, BB, R
HOUM	<i>Holosteum umbellatum</i>	jagged chickweed	CARYOPHYLLACEAE	R
HYPE	<i>Hypericum perforatum</i> ;	St. John's wort	HYPERICACEAE	BS, BB, near shoreline
HYFO	<i>H. formosum</i>			
JU	<i>Juncus</i> spp.	rush	JUNCACEAE	shorelines
LASE	<i>Lactuca serriola</i> (?)	prickly lettuce	COMPOSITAE	Irr. Site
LEDO	<i>Lesquerella douglasii</i>	Columbia bladderpod	CRUCIFERAE	BS, BB
LIDA	<i>Linaria dalmatica</i>	toadflax	SCROPHULARIACEAE	Irr. Sites
LIRU	<i>Lithospermum ruderales</i>	Columbia puccoon (rock nuts)	BORAGINACEAE	BS, BB
LODI	<i>Lomatium dissectum</i>	fern-leaved lomatium	UMBELLIFERAE	R, BS, BB
LOTR	<i>Lomatium triternatum</i>	nine-leaf lomatium	UMBELLIFERAE	BS, BB
LUSE	<i>Lupinus sericeus</i>	silky lupine	LEGUMINOSAE	Irr. Site, BS, BB
MAEX	<i>Madia exigua</i>	little tarweed	COMPOSITAE	BS, BB
MESA	<i>Medicago sativa</i>	alfalfa	LEGUMINOSAE	Irr. Site
MEAL	<i>Melilotus alba</i>	white sweet clover	LEGUMINOSAE	Irr. Sites
MOPE	<i>Montia perfoliata</i> (=Claytonia p.)	Siberian springbeauty	PORTULACACEAE	BS, BB
OECA	<i>Oenothera caespitosa</i>	evening primrose	ONAGRACEAE	Irr. Sites
ORBA	<i>Orthocarpus barbatus</i>	Grand Coulee owl-clover	SCROPHULARIACEAE	BS, BB, dry sites
PHHA	<i>Phacelia hastata</i>	whiteleaf phacelia	HYDROPHYLLACEAE	BS, BB, dry sites
PHLI	<i>Phacelia linearis</i>	threadleaf phacelia	HYDROPHYLLACEAE	BS, BB
PHLO	<i>Phlox longifolia</i>	long-lvd phlox	POLEMONIACEAE	BS, BB
PLPA	<i>Plantago patagonica</i>	Nippleseed plantain	PLANTAGINACEAE	BS, BB
RAGL	<i>Ranunculus glaberrimus</i>	buttercup	RANUNCULACEAE	BS, BB
RHRA	<i>Rhus radicans</i>	poison ivy	ANACARDIACEAE	R
RUCR	<i>Rumex crispus</i>	curly dock	POLYGONACEAE	Irr. Site
SIAS	<i>Sisymbrium altissimum</i>	tumble mustard	CRUCIFERAE	Irr. Sites
SMST	<i>Smilacena stellata</i>	star Solomon's seal	LILIACEAE	R
SODU	<i>Solanum dulcamara</i>	nightshade	SOLANACEAE	Irr. Site

**APPENDIX C - continued**  
**PLANT SPECIES IDENTIFIED ON**  
**THE CHIEF JOSEPH WILDLIFE MITIGATION MONITORING SITES**

CODE	SCIENTIFIC NAME	COMMON NAME	FAMILY	HABITAT
<b>Herbs and Forbs - continued</b>				
SOMI	<i>Solidago missouriensis</i> (?)	goldenrod	COMPOSITAE	Irr. Sites
SOOL	<i>Sonchus oleraceus</i>	sow thistle	COMPOSITAE	Irr. Site
SPMU	<i>Sphaeralcea munroana</i>	white-stemmed globe-mallow	MALVACEAE	BS, BB
TRDU	<i>Tragopogon dubius</i>	yellow salsify (goatsbeard)	COMPOSITAE	BS, BB, Irr. Sites
TRDU2	<i>Trifolium dubium</i>	suckling clover	LEGUMINOSAE	Irr. Site
URDI	<i>Urtica dioica</i>	stinging nettle	URTICACEAE	Irr. Site
VETH	<i>Verbascum thapsus</i>	mullein	SCROPHULARIACEAE	BS, BB, Irr. Sites
VEAM	<i>Veronica americana</i>	American speedwell	SCROPHULARIACEAE	shoreline
VI	<i>Viola</i> sp	violet	VIOLACEAE	
<b>Grasses</b>				
AGCR	<i>Agropyron cristatum</i> ( <i>A. desertorum</i> complex)	crested wheatgrass	GRAMINEAE	BS, BB
AGSP	<i>Agropyron spicatum</i>	bluebunch wheatgrass	GRAMINEAE	BS, BB
AG	<i>Agrostis</i> sp	bentgrass	GRAMINEAE	Irr. Site, near shore
AGIN	<i>Agrostis interrupta</i>	interrupted bentgrass	GRAMINEAE	BS, BB
BRCO	<i>Bromus commutatus</i>	hairy brome	GRAMINEAE	BS, BB
BRIN	<i>Bromus inermis</i>	smooth brome	GRAMINEAE	BS, BB
BRMO	<i>Bromus mollis</i>	soft brome	GRAMINEAE	BS, BB
BRTE	<i>Bromus tectorum</i>	cheat grass	GRAMINEAE	BS, BB
DAGL	<i>Dactylis glomerata</i>	orchardgrass	GRAMINEAE	Irr. Sites
ELCI	<i>Elymus cinereus</i>	giant wildrye	GRAMINEAE	BS, BB
ELGL	<i>Elymus glaucus</i>	blue wildrye	GRAMINEAE	BS, BB
FEID	<i>Festuca idahoensis</i>	Idaho fescue	GRAMINEAE	BS, BB
FEOV*	<i>Festuca ovina</i>	sheep fescue	GRAMINEAE	BS, BB
FEOV*	<i>Festuca ovina</i> var. <i>duriuscula</i>	hard fescue	GRAMINEAE	Irr. Sites
GLST	<i>Glyceria striata</i>	fowl mannagrass	GRAMINEAE	shorelines
HOJU	<i>Hordeum jubatum</i>	squirrel-tail barley	GRAMINEAE	weedy
KOCR	<i>Koeleria cristata</i>	Koeler's grass	GRAMINEAE	BS, BB
ORHY	<i>Oryzopsis hymenoides</i>	Indian ricegrass	GRAMINEAE	BS, BB
POCO	<i>Poa compressa</i>	Canada bluegrass	GRAMINEAE	Irr. Sites
POIN	<i>Poa interior</i>	inland bluegrass	GRAMINEAE	BS, BB
POPA	<i>Poa palustris</i>	fowl bluegrass	GRAMINEAE	Irr. Sites, shorelines
POPR	<i>Poa pratensis</i>	Kentucky bluegrass	GRAMINEAE	Irr. Sites
POSA	<i>Poa sandbergii</i>	Sandberg's bluegrass	GRAMINEAE	BS, BB, R
POSC	<i>Poa scabrella</i>	pine bluegrass	GRAMINEAE	BS, BB, R
SPCR	<i>Sporobolus cryptandrus</i>	sand dropseed	GRAMINEAE	BS, BB
STCO	<i>Stipa comata</i>	needle-and-thread	GRAMINEAE	BS, BB, R
STOC	<i>Stipa occidentalis</i>	needle-and-thread	GRAMINEAE	BS, BB
VUMI	<i>Vulpia microstachys</i>	annual fescue	GRAMINEAE	BS, BB

**APPENDIX D**  
**BIRDS IDENTIFIED ON THE CHIEF JOESEPH DAM**  
**WILDLIFE MITIGATION SITES**

Common Name	Scientific Name	Non-irrigated Sites						Irrigated Sites						Other Areas Along Rufous Woods Reservoir
		6	7	9	18	19	20	1	3	5	11	12	15	
Western grebe	<u>Aechmophorus occidentalis</u>													N
Black-crowned night heron	<u>Nycticorax nycticorax</u>											X		X
Great blue heron	<u>Ardea herodias</u>		X	X							X	X		X
Canada goose	<u>Branta canadensis</u>		X		X							X		X
Mallard	<u>Anas platyrhynchos</u>		X						X	X		N		X
Northern pintail	<u>Anas acuta</u>													N
American wigeon	<u>Anas americana</u>								N	X		N		X
Redhead	<u>Aythya americana</u>													N
Common goldeneye	<u>Bucephala clangula</u>													N
Bufflehead	<u>Bucephala albeola</u>													N
Common merganser	<u>Mergus merganser</u>													X
Northern harrier	<u>Circus cyaneus</u>								N	N		X		N
Turkey vulture	<u>Cathartes aura</u>											X		X
Red-tailed hawk	<u>Buteo jamaicensis</u>						X		X			X		N
Bald eagle	<u>Haliaeetus leucocephalus</u>		X	X	N		N		N	X				X
Golden eagle	<u>Aquila chrysaetos</u>	X		X										X
Osprey	<u>Pandion haliaetus</u>	X			X							X		X
American kestrel	<u>Falco sparverius</u>	X					X		X	X			X	
California quail	<u>Callipepla californica</u>		X		X				X	N		X		X
Ring-necked pheasant	<u>Phasianus colchicus</u>				X			N	X	X	N	X		
Chukar	<u>Alectoris chukar</u>							N			N			
American coot	<u>Fulica americana</u>													X
Killdeer	<u>Charadrius vociferous</u>					X				X		X		
Spotted sandpiper	<u>Actitis macularia</u>	X			X		X			X	X			
Ring-billed gull	<u>Larus delawarensis</u>		X											X
California gull	<u>Larus californicus</u>				X			X	X					
Caspian tern	<u>Sterna caspia</u>		N											
Mourning dove	<u>Zenaidura macroura</u>	X	X		X	X	X	X	X	X	X	X	X	X
Great horned owl	<u>Bubo virginianus</u>													X
Barn owl	<u>Tyto alba</u>							X	X	X				
Common nighthawk	<u>Chordeiles minor</u>	X	X							X	X	X		X
Common poorwill	<u>Phalaenoptilus nuttallii</u>													X
Belted kingfisher	<u>Ceryle alcyon</u>				X				X	X				N

Common Name	Scientific Name	Non-irrigated Sites						Irrigated Sites						Other Areas Along Rufous Woods Reservoir
		6	7	9	18	19	20	1	3	5	11	12	15	
Lewis woodpecker	<u>Melanerpes lewis</u>						X							
Northern flicker	<u>Colaptes auratus</u>				X			X	X	X	N	N	N	X
Eastern kingbird	<u>Tyrannus tyrannus</u>	X	X		X	X	X	X	X	X	X	X	X	X
Western kingbird	<u>Tyrannus verticalis</u>				X		X			X			X	
Flycatcher	<u>Empidonax spp.</u>						X							
Say's phoebe	<u>Sayornis saya</u>		X		X									
Western wood-pewee	<u>Contopus sordidulus</u>						X	X	X	X				N
Bank swallow	<u>Riparia riparia</u>										X			
Cliff swallow	<u>Hirundo pyrrhonota</u>		X		X			X	X		X	X	X	X
Barn swallow	<u>Hirundo rustica</u>										X			
N. rough-winged swallow	<u>Stelgidopteryx serripennis</u>					X			X	X		X	X	X
Violet-green swallow	<u>Tachycineta thalassina</u>				X						X			
Black-billed magpie	<u>Pica pica</u>	N	X	X	N		N			X	N	N		X
Common raven	<u>Corvus corax</u>	N			N							X	X	X
Common crow	<u>Corvus brachyrhynchos</u>		X						X			X		X
Black-capped chickadee	<u>Parus atricapillus</u>				X		X				X			
Rock wren	<u>Salpinctes obsoletus</u>		X							X	X			X
Marsh wren	<u>Cistothorus palustris</u>		X											
Wren	<u>Troglodytes spp.</u>				X									
American robin	<u>Turdus migratorius</u>			X	X		X	X	X	X	X	X	X	X
Varied thrush	<u>Ixoreus naevius</u>										N			
Cedar waxwing	<u>Bombycilla cedrorum</u>				X			X	X	X	X	X	X	X
Loggerhead shrike	<u>Lanius ludovicianus</u>	X						X	X		X			
Northern shrike	<u>Lanius excubitor</u>				N									
European starling	<u>Sturnus vulgaris</u>							N			X	X		X
Warbling vireo	<u>Vireo gilvus</u>							X			X			
MacGillivray's warbler	<u>Oporornis tolmiei</u>							X		X				
Yellow warbler	<u>Dendroica petechia</u>				X			X	X	X	X	X	X	
Yellow-breasted chat	<u>Icteria virens</u>				X				X	X		X		
Western meadowlark	<u>Sturnella neglecta</u>	X	X	X	X	X	X	X	X	X	X	X	X	X
Yellow-headed blackbird	<u>Xanthocephalus xanthocephalus</u>		X									X		
Red-winged blackbird	<u>Agelaius phoeniceus</u>		X		X	X		X	X	X	X	X		X
Northern oriole	<u>Icterus galbula bullockii</u>				X	X	X	X		X	X	X		
Brewer's blackbird	<u>Euphagus cyanocephalus</u>	X		X	X	X	X	X	X	X	X	X	X	X
Brown-headed cowbird	<u>Molothrus ater</u>												X	

Common Name	Scientific Name	Non-irrigated Sites						Irrigated Sites						Other Areas Along Rufous Woods Reservoir
		6	7	9	18	19	20	1	3	5	11	12	15	
Western tanager	<u>Piranga ludoviciana</u>							X		X	X	X	X	
Black-headed grosbeak	<u>Pheucticus melanocephalus</u>				X									
Lazuli bunting	<u>Passerina amoena</u>												X	
House finch	<u>Carpodacus mexicanus</u>									X		X		
American goldfinch	<u>Carduelis tristis</u>							X	X	X	X	X	X	
Lark sparrow	<u>Chondestes grammacus</u>		X		X									
Brewer's sparrow	<u>Spizella breweri</u>													
White-crowned sparrow	<u>Zonotrichia leucophrys</u>									X		X		
Song sparrow	<u>Melospiza melodia</u>											X		
Dark-eyed junco	<u>Junco hyemalis</u>						N	N	N	N	N	N		N
Rufous-sided towhee	<u>Pipilo erythrophthalmus</u>				X									
TOTAL (79)		12	20	7	31	8	17	23	28	34	29	37	17	41

X = observed during breeding season

N = observed during non-breeding season



**APPENDIX E**  
**MAMMALS AND REPTILES IDENTIFIED ON THE CHIEF JOESEPH DAM**  
**WILDLIFE MITIGATION SITES**

Common Name	Scientific Name	Non-irrigated Sites						Irrigated Sites					
		6	7	9	18	19	20	1	3	5	11	12	15
Mammals													
Vole	<u>Microtus</u> spp. or <u>Lagurus curtatus</u>	X	X	X	X	X	X	X	X	X	X	X	X
Porcupine	<u>Erethizon dorsatum</u>		X		X						X		X
Muskrat	<u>Ondatra zibethica</u>				X								
Beaver	<u>Castor canadensis</u>				X		X		X	X			
Yellow pine chipmunk	<u>Eutamias amoenus</u>						X						
Yellow-bellied marmot	<u>Marmota flaviventris</u>									X			
Nuttall's cottontail	<u>Sylvilagus nuttallii</u>		X										
Badger	<u>Taxidea taxus</u>		X		X		X		X			X	
Striped skunk	<u>Mephitis mephitis</u>												
Raccoon	<u>Procyon lotor</u>				X						X		X
Coyote	<u>Canis latrans</u>	X	X	X	X		X	X	X	X	X	X	X
Black bear	<u>Ursus americanus</u>				X		X		X	X		X	
Mule deer	<u>Odocoileus hemionus hemionus</u>	X	X	X	X	X	X	X	X	X	X	X	X
Reptiles													
Racer	<u>Coluber constrictor</u>	X	X								X		
Gopher snake	<u>Pituophis melanoleucus</u>												
Western rattlesnake	<u>Crotalus viridis</u>	X			X								
TOTAL		4	6	2	9	1	6	2	5	5	5	4	4

**APPENDIX F**  
**Vegetation Monitoring Data**

**Tree and Shrub Cover Data**

# Chief Joseph Dam Vegetation Monitoring

COEX0154

## Trees and Shrubs

Site 1  
Transect 1  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 41.5  
Total Length 100.0  
Total Occurances 11.0  
Percent Coverage 41.50%

Site 1  
Transect 2  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 46.8  
Total Length 100.0  
Total Occurances 26.0  
Percent Coverage 46.80%

	Species	Start	End	Total
1	rowo	98.0	72.8	25.2
2	syal	96.1	91.9	4.2
3	syal	72.8	72.2	0.6
4	rowo	69.5	67.7	1.8
5	syal	66.5	65.8	0.7
6	syal	63.4	61.5	1.9
7	rowo	53.4	52.5	0.9
8	rowo	51.5	49.1	2.4
9	rowo	47.5	46.9	0.6
10	rudi	46.9	44.2	2.7
11	rowo	44.3	43.8	0.5
12				
13				
14				
15				
16				
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19				
20				
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45				

	Species	Start	End	Total
1	syal	0.5	1.0	0.5
2	shsp.	1.0	8.5	7.5
3	syal	1.8	6.5	4.7
4	cost	7.5	10.1	2.6
5	cost	13.4	15.6	2.2
6	cost	17.7	20.8	3.1
7	rowo	22.6	24.2	1.6
8	syal	22.9	23.5	0.6
9	rowo	25.1	26.5	1.4
10	caar	25.6	26.0	0.4
11	caar	28.1	29.2	1.1
12	rowo	29.3	30.8	1.5
13	caar	31.9	39.2	7.3
14	rowo	39.4	40.0	0.6
15	car	40.2	42.0	1.8
16	rowo	43.3	44.2	0.9
17	rowo	44.6	45.0	0.4
18	rowo	45.5	47.5	2.0
19	rowo	49.8	50.2	0.4
20	caar	51.4	51.9	0.5
21	rowo	52.7	53.0	0.3
22	caar	55.6	56.0	0.4
23	caar	56.9	57.7	0.8
24	syal	62.2	64.2	2.0
25	syal	74.6	76.2	1.6
26	jusc	91.8	92.4	0.6
27				
28				
29				
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 1  
Transect 3  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 155.7  
Total Length 100.0  
Total Occurances 17.0  
Percent Coverage 155.70%

Site 1  
Transect 4  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 99.1  
Total Length 100.0  
Total Occurances 27.0  
Percent Coverage 99.10%

	Species	Start	End	Total
1	syal	99.8	96.0	3.8
2	riau	95.7	95.0	0.7
3	shsp.	92.4	76.2	16.2
4	riau	91.6	91.1	0.5
5	rowo	86.2	48.4	37.8
6	syal	86.6	86.1	0.5
7	syal	85.0	84.4	0.6
8	caar	67.7	61.0	6.7
9	rudi	59.0	54.5	4.5
10	rudi	50.5	48.7	1.8
11	riau	47.0	44.4	2.6
12	rowo	47.3	20.6	26.7
13	elan	39.6	14.4	25.2
14	rudi	35.8	35.0	0.8
15	syal	20.4	18.9	1.5
16	rops	17.2		17.2
17	jusc	17.0	8.4	8.6
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19				
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	Species	Start	End	Total
1	riau	0.8	3.7	2.9
2	rops	6.2	9.3	3.1
3	rops	18.4	21.9	3.5
4	crdo	18.9	19.6	0.7
5	rops	23.6	27.3	3.7
6	elan	30.5	46.5	16.0
7	riau	34.8	35.5	0.7
8	rowo	36.9	38.9	2.0
9	riau	40.1	42.3	2.2
10	rowo	44.8	45.2	0.4
11	sace	45.7	49.2	3.5
12	rowo	50.6	53.0	2.4
13	elan	51.2	56.6	5.4
14	caar	53.8	60.5	6.7
15	roao	61.9	74.7	12.8
16	rudi	63.9	68.2	4.3
17	cost	66.2	74.2	8.0
18	syal	69.7	70.2	0.5
19	syal	74.9	75.4	0.5
20	syal	77.0	78.2	1.2
21	rowo	80.7	81.7	1.0
22	syal	82.6	83.1	0.5
23	riau	83.3	85.4	2.1
24	cost	86.6	96.7	10.1
25	rowo	86.7	87.1	0.4
26	rowo	91.8	95.2	3.4
27	cost	98.4	99.5	1.1
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 1  
 Transect 5  
 Total 100  
 Start At \_\_\_\_\_  
 Zero At \_\_\_\_\_

Site \_\_\_\_\_  
 Transect \_\_\_\_\_  
 Total \_\_\_\_\_  
 Start At \_\_\_\_\_  
 Zero At \_\_\_\_\_

Total Coverage 85.2  
 Total Length 100.0  
 Total Occurrences 16.0  
 Percent Coverage 85.20%

Total Coverage \_\_\_\_\_  
 Total Length \_\_\_\_\_  
 Total Occurrences \_\_\_\_\_  
 Percent Coverage \_\_\_\_\_

	Species	Start	End	Total
1	rops	98.6	98.2	0.4
2	rops	93.7	92.5	1.2
3	rowo	87.0	86.5	0.5
4	rowo	85.5	62.5	23.0
5	rops	83.8	80.3	3.5
6	rops	73.0	70.8	2.2
7	rudi	63.5	40.1	23.4
8	rowo	59.8	50.5	9.3
9	riau	44.7	41.9	2.8
10	syai	23.3	20.4	2.9
11	sace	21.5	19.9	1.6
12	sace	17.1	15.6	1.5
13	elan	18.4	13.9	4.5
14	sace	20.7	18.1	2.6
15	rudi	15.9	10.4	5.5
16	rudi	6.1	5.8	0.3
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	Species	Start	End	Total
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

## Trees and Shrubs

Site 3  
Transect 1  
Total 100  
Start At stake  
Zero head

Total Coverage 152.8  
Total Length 100.0  
Total Occurrences 28.0  
Percent Coverage 152.80%

	Species	Start	End	Total
1	rhgl	102.0	98.6	3.4
2	cost	102.0	100.5	1.5
3	rops	102.0	65.0	37.0
4	sace	94.5	91.0	3.5
5	sodu	93.8	90.5	3.3
6	poba	94.4	93.8	0.6
7	rudi	89.8	66.0	23.8
8	cost	77.2	74.2	3.0
9	amal	70.8	62.0	8.8
10	cost	66.0	65.0	1.0
11	cost	62.7	60.9	1.8
12	rudi	63.6	62.7	0.9
13	sace	65.0	47.0	18.0
14	rops	44.4	17.0	27.4
15	cost	44.7	44.5	0.2
16	cost	42.3	39.4	2.9
17	rowo	36.6	35.6	1.0
18	rowo	33.4	33.1	0.3
19	syal	27.0	25.4	1.6
20	rowo	25.6	21.3	4.3
21	syal	22.7	21.6	1.1
22	rowo	19.2	17.3	1.9
23	rowo	16.3	14.1	2.2
24	rowo	10.1	9.2	0.9
25	rowo	7.6	7.1	0.5
26	rowo	5.8	4.6	1.2
27	cost	5.3	4.9	0.4
28	syal	2.4	2.1	0.3
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Site 3  
Transect 2  
Total 150  
Start At head  
Zero stake

Total Coverage 109.1  
Total Length 150.0  
Total Occurrences 28.0  
Percent Coverage 72.73%

	Species	Start	End	Total
1	rowo	153.0	151.5	1.5
2	syal	149.0	148.2	0.8
3	rhgl	146.5	145.3	1.2
4	riau	145.9	145.5	0.4
5	riau	142.8	142.0	0.8
6	syal	137.8	135.3	2.5
7	cost	135.2	133.8	1.4
8	rowo	136.0	118.5	17.5
9	riau	130.9	128.2	2.7
10	rowo	117.5	116.4	1.1
11	rowo	115.4	114.5	0.9
12	rowo	94.1	93.8	0.3
13	amal	88.5	85.5	3.0
14	sace	87.6	68.2	19.4
15	rowo	81.6	80.6	1.0
16	rowo	79.6	75.7	3.9
17	rowo	72.0	71.6	0.4
18	rowo	67.6	65.4	2.2
19	rowo	58.2	55.9	2.3
20	syal	55.5	55.2	0.3
21	rowo	54.9	35.5	19.4
22	sace	48.5	44.6	3.9
23	rudi	42.2	41.5	0.7
24	rudi	40.9	35.2	5.7
25	pipo	40.0	34.0	6.0
26	crdo	29.8	24.6	5.2
27	jusc	22.3	19.5	2.8
28	amal	17.9	16.1	1.8
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 3  
Transect 3  
Total 150  
Start At head  
Zero stake

Total Coverage 129.8  
Total Length 150.0  
Total Occurrences 22.0  
Percent Coverage 86.53%

	Species	Start	End	Total
1	syal	147.5	147.1	0.4
2	rowo	147.4	144.2	3.2
3	rowo	143.1	134.4	8.7
4	riau	141.4	139.8	1.6
5	cost	140.2	133.1	7.1
6	rowo	133.6	131.5	2.1
7	rowo	130.0	127.5	2.5
8	syal	130.0	128.0	2.0
9	cost	127.8	124.8	3.0
10	rowo	125.2	116.2	9.0
11	rowo	115.4	112.6	2.8
12	rowo	111.9	111.7	0.2
13	rhgl	110.6	110.0	0.6
14	rowo	105.9	105.2	0.7
15	rowo	101.8	77.2	24.6
16	riau	93.4	78.0	15.4
17	rhgl	90.2	88.3	1.9
18	elan	72.7	52.0	20.7
19	sace	59.0	42.0	17.0
20	syal	60.5	59.1	1.4
21	syal	57.4	57.5	0.1
22	riau	56.8	52.0	4.8
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Site 3  
Transect 4  
Total 100  
Start At head  
Zero stake

Total Coverage 59.9  
Total Length 100.0  
Total Occurrences 22.0  
Percent Coverage 59.90%

	Species	Start	End	Total
1	rowo	101.0	100.6	0.4
2	syal	99.9	98.0	1.9
3	rowo	99.6	97.5	2.1
4	rowo	94.4	87.5	6.9
5	syal	92.3	91.3	1.0
6	syal	85.8	84.8	1.0
7	rowo	84.8	83.9	0.9
8	rowo	82.9	82.0	0.9
9	rowo	81.4	79.9	1.5
10	rowo	76.6	76.2	0.4
11	rowo	75.2	74.6	0.6
12	rowo	73.5	70.9	2.6
13	rowo	69.6	68.4	1.2
14	riau	67.4	65.7	1.7
15	riau	63.7	62.4	1.3
16	rowo	59.3	58.1	1.2
17	rowo	52.3	51.8	0.5
18	rowo	48.4	47.6	0.8
19	rowo	47.2	44.2	3.0
20	rowo	40.9	39.4	1.5
21	sace	37.3	10.0	27.3
22	crdo	23.4	22.2	1.2
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 3  
Transect 5  
Total 150  
Start At head  
Zero stake

Total Coverage 189.4  
Total Length 150.0  
Total Occurrences 31.0  
Percent Coverage 126.27%

Site 3  
Transect 6  
Total 100  
Start At head  
Zero stake

Total Coverage 109.8  
Total Length 100.0  
Total Occurrences 10.0  
Percent Coverage 109.80%

	Species	Start	End	Total
1	cost	145.0	140.5	4.5
2	rudi	141.4	139.0	2.4
3	shca	140.5	124.9	15.6
4	rowo	139.0	138.0	1.0
5	cost	136.5	124.3	12.2
6	rowo	126.0	125.5	0.5
7	rowo	124.3	123.2	1.1
8	shca	123.3	119.5	3.8
9	shca	118.7	116.4	2.3
10	rowo	114.5	114.1	0.4
11	rowo	112.4	112.1	0.3
12	rowo	109.6	108.5	1.1
13	rowo	107.0	106.6	0.4
14	rops	105.0	103.8	1.2
15	sace	105.1	97.0	8.1
16	cost	104.6	104.2	0.4
17	riau	102.5	102.0	0.5
18	rops	101.0	72.8	28.2
19	shca	98.6	97.6	1.0
20	shca	94.5	91.4	3.1
21	rowo	91.4	83.5	7.9
22	riau	83.7	82.8	0.9
23	rowo	79.9	75.8	4.1
24	sace	77.5	70.9	6.6
25	rowo	75.0	74.7	0.3
26	unid10	71.5	67.3	4.2
27	rops	73.5	14.5	59.0
28	rowo	72.8	66.7	6.1
29	poba	55.9	52.3	3.6
30	pipo	18.0	10.4	7.6
31	putr	6.9	5.9	1.0
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	Species	Start	End	Total
1	rowo	104.8	104.4	0.4
2	rowo	103.0	61.1	41.9
3	crdo	102.5	90.5	12.0
4	crdo	85.5	85.0	0.5
5	crdo	65.9	65.0	0.9
6	elan	32.2	2.0	30.2
7	sace	29.1	18.1	11.0
8	riau	17.7	15.9	1.8
9	rowo	14.9	4.8	10.1
10	rudi	3.0	2.0	1.0
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 3  
Transect 7  
Total 150  
Start At head  
Zero stake

Total Coverage 109.2  
Total Length 150.0  
Total Occurrences 21.0  
Percent Coverage 72.80%

Site 3  
Transect 8  
Total 140  
Start At head  
Zero stake

Total Coverage 100.5  
Total Length 140.0  
Total Occurrences 10.0  
Percent Coverage 71.79%

	Species	Start	End	Total
1	cost	152.0	145.5	6.5
2	riau	146.4	140.0	6.4
3	cost	142.7	130.4	12.3
4	rowo	137.3	135.4	1.9
5	rowo	131.0	129.7	1.3
6	cost	127.3	117.6	9.7
7	rowo	125.3	124.2	1.1
8	rowo	122.3	119.6	2.7
9	rowo	118.8	114.5	4.3
10	rhgl	112.9	109.5	3.4
11	riau	109.0	107.0	2.0
12	elan	107.8	106.7	1.1
13	rowo	110.0	97.7	12.3
14	rhgl	101.7	89.8	11.9
15	rowo	86.8	86.4	0.4
16	chna	83.3	79.7	3.6
17	chna	78.0	75.6	2.4
18	pipo	55.6	46.0	9.6
19	rowo	48.4	36.3	12.1
20	rowo	35.3	34.5	0.8
21	riau	14.3	10.9	3.4
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	Species	Start	End	Total
1	cost	144.4	142.0	2.4
2	rowo	141.6	122.6	19.0
3	cost	139.0	135.3	3.7
4	syal	132.1	131.0	1.1
5	cost	122.4	119.3	3.1
6	syal	120.6	116.3	4.3
7	cost	116.8	103.0	13.8
8	elan	106.5	80.0	26.5
9	rowo	107.0	97.5	9.5
10	pipo	46.8	29.7	17.1
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 3  
Transect 9  
Total 150  
Start At head  
Zero stake

Total Coverage 157.4  
Total Length 150.0  
Total Occurrences 29.0  
Percent Coverage 104.93%

Site 3  
Transect 10  
Total 140  
Start At head  
Zero stake

Total Coverage 102.3  
Total Length 140.0  
Total Occurrences 19.0  
Percent Coverage 73.07%

	Species	Start	End	Total
1	cost	150.0	123.8	26.2
2	shca	148.3	145.2	3.1
3	rowo	147.1	141.1	6.0
4	rowo	139.5	135.5	4.0
5	syal	122.3	121.2	1.1
6	rowo	119.6	118.9	0.7
7	rowo	116.5	104.2	12.3
8	riau	114.2	110.5	3.7
9	riau	108.0	106.0	2.0
10	rhgl	96.4	94.0	2.4
11	rhgl	91.8	90.4	1.4
12	riau	88.6	84.9	3.7
13	rhgl	86.7	83.5	3.2
14	rhgl	78.5	77.8	0.7
15	cost	76.9	73.2	3.7
16	syal	72.5	69.5	3.0
17	elan	72.0	55.0	17.0
18	poba	58.0	45.0	13.0
19	elan	45.8	21.0	24.8
20	rhgl	41.8	39.5	2.3
21	poba	39.5	37.0	2.5
22	rowo	33.0	30.0	3.0
23	poba	32.5	32.0	0.5
24	rowo	28.3	24.5	3.8
25	rowo	22.6	21.9	0.7
26	syal	17.5	16.0	1.5
27	rops	12.5	2.0	10.5
28	rowo	4.5	4.1	0.4
29	rowo	3.2	3.0	0.2
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	Species	Start	End	Total
1	rowo	140.9	135.9	5.0
2	sace	137.5	136.9	0.6
3	cost	136.4	128.3	8.1
4	riauau	134.0	133.6	0.4
5	rowo	128.9	126.8	2.1
6	elan	128.4	118.0	10.4
7	cost	126.0	112.2	13.8
8	rowo	102.0	114.0	12.0
9	riauau	119.0	114.8	4.2
10	riauau	114.2	108.5	5.7
11	rowo	112.3	111.1	1.2
12	cost	108.0	101.4	6.6
13	syal	74.9	68.7	6.2
14	sace	68.8	63.6	5.2
15	prsp	50.6	45.8	4.8
16	cila	49.5	41.8	7.7
17	rhgl	44.2	43.0	1.2
18	rhgl	34.5	29.0	5.5
19	syal	29.8	28.2	1.6
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 3  
Transect 11  
Total 100  
Start At stake  
Zero head

Total Coverage 178.7  
Total Length 100.0  
Total Occurances 23.0  
Percent Coverage 178.70%

Site 3  
Transect 12  
Total 100  
Start At head  
Zero stake

Total Coverage 73.4  
Total Length 100.0  
Total Occurances 14.0  
Percent Coverage 73.40%

	Species	Start	End	Total
1	rowo	107.0	95.0	12.0
2	syal	95.0	91.6	3.4
3	rowo	90.3	87.8	2.5
4	riau	87.3	84.6	2.7
5	rhgl	85.8	84.1	1.7
6	crdo	81.8	74.7	7.1
7	artr	80.8	79.8	1.0
8	elan	79.0	48.5	30.5
9	syal	85.0	84.0	1.0
10	syal	82.0	80.2	1.8
11	sace	69.3	66.8	2.5
12	rowo	63.5	55.6	7.9
13	rudi	55.4	55.0	0.4
14	rowo	53.1	35.0	18.1
15	sodu	50.3	47.0	3.3
16	rops	48.5	8.0	40.5
17	sodu	35.2	34.4	0.8
18	rhgl	35.8	32.8	3.0
19	riau	33.1	31.0	2.1
20	rhgl	31.2	27.7	3.5
21	rowo	29.2	2.0	27.2
22	riau	25.0	22.2	2.8
23	syal	5.5	2.6	2.9
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	Species	Start	End	Total
1	rowo	101.4	100.7	0.7
2	syal	98.8	98.2	0.6
3	syal	97.7	96.4	1.3
4	syal	92.0	91.7	0.3
5	rowo	89.7	87.0	2.7
6	riau	80.8	80.6	0.2
7	rowo	76.5	75.5	1.0
8	syal	53.5	54.8	1.3
9	sace	47.5	46.2	1.3
10	sace	45.0	49.4	4.4
11	rhgl	38.7	37.3	1.4
12	elan	35.8	2.0	33.8
13	rowo	19.8	2.0	17.8
14	pipo	8.6	2.0	6.6
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 5  
Transect 9  
Total 150  
Start At stake  
Zero At head

Total Coverage 96.4  
Total Length 150.0  
Total Occurrences 26.0  
Percent Coverage 64.27%

	Species	Start	End	Total
1	cili	139.2	135.5	3.7
2	cili	135.0	134.0	1.0
3	cili	133.0	132.0	1.0
4	rops	131.5	109.0	22.5
5	rowo	102.2	101.8	0.4
6	rowo	99.2	98.5	0.7
7	rowo	98.2	91.6	6.6
8	rowo	90.2	87.6	2.6
9	jusc	80.0	78.0	2.0
10	riau	70.8	69.6	1.2
11	riau	68.6	68.3	0.3
12	riau	67.6	64.4	3.2
13	riau	63.0	60.8	2.2
14	riau	60.0	59.5	0.5
15	riau	59.2	56.2	3.0
16	riau	55.8	55.5	0.3
17	riau	49.2	48.0	1.2
18	rowo	33.6	32.0	1.6
19	rowo	31.3	23.0	8.3
20	riau	26.3	23.8	2.5
21	rowo	22.5	9.5	13.0
22	riau	19.5	19.0	0.5
23	riau	18.3	17.1	1.2
24	riau	16.0	14.9	1.1
25	rowo	7.8		7.8
26	cost	11.5	3.5	8.0
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Site 5  
Transect 10  
Total 100  
Start At stake  
Zero At head

Total Coverage 44.1  
Total Length 100.0  
Total Occurrences 24.0  
Percent Coverage 44.10%

	Species	Start	End	Total
1	rowo	96.1	94.2	1.9
2	syai	89.3	89.0	0.3
3	syai	88.4	86.7	1.7
4	rowo	81.9	81.5	0.4
5	syai	80.3	79.8	0.5
6	cost	62.0	60.8	1.2
7	elan	55.0	39.8	15.2
8	rowo	38.7	35.8	2.9
9	rowo	33.4	32.8	0.6
10	rowo	27.5	26.8	0.7
11	syai	23.2	22.2	1.0
12	rowo	22.0	21.6	0.4
13	syai	21.4	20.9	0.5
14	cost	19.9	19.6	0.3
15	cost	18.3	16.3	2.0
16	rowo	16.7	16.0	0.7
17	rowo	15.4	14.9	0.5
18	syai	14.2	12.6	1.6
19	rowo	13.6	11.7	1.9
20	rowo	11.3	7.8	3.5
21	riau	10.5	9.6	0.9
22	riau	7.6	7.1	0.5
23	rowo	7.6	5.0	2.6
24	rowo	4.5	2.2	2.3
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 5  
 Transect 11  
 Total 140  
 Start At stake  
 Zero At head

Total Coverage 95.4  
 Total Length 140.0  
 Total Occurances 22.0  
 Percent Coverage 68.14%

Site 5  
 Transect 12  
 Total 100  
 Start At stake  
 Zero At head

Total Coverage 34.2  
 Total Length 100.0  
 Total Occurances 13.0  
 Percent Coverage 34.20%

	Species	Start	End	Total
1	elan	133.4	118.5	14.9
2	cli	84.1	83.8	0.3
3	elan	83.5	67.1	16.4
4	amal	83.2	80.0	3.2
5	cli	82.0	79.8	2.2
6	rowo	74.4	73.6	0.8
7	amal	69.3	66.1	3.2
8	rowo	64.8	61.1	3.7
9	rowo	60.5	57.8	2.7
10	rowo	54.3	48.6	5.7
11	rowo	48.1	45.5	0.6
12	amal	45.2	42.0	3.2
13	rowo	41.8	39.4	2.4
14	rowo	30.5	30.0	0.5
15	rowo	29.3	29.0	0.3
16	syai	28.4	27.6	0.8
17	rowo	22.9	18.8	4.1
18	cost	22.4	21.8	0.6
19	riau	21.4	21.0	0.4
20	cost	18.1	17.5	0.6
21	rowo	18.4	3.2	15.2
22	cost	15.9	2.3	13.6
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	Species	Start	End	Total
1	elan	98.0	87.0	11.0
2	cost	57.8	57.2	0.6
3	rowo	46.4	45.7	0.7
4	rowo	26.9	26.2	0.7
5	rowo	23.8	23.4	0.4
6	rowo	18.8	16.8	2.0
7	rowo	15.8	13.6	2.2
8	syai	14.0	12.3	1.7
9	rowo	13.0	11.8	1.2
10	rowo	10.8	6.8	4.0
11	rops	11.2	2.9	8.3
12	syai	6.2	5.4	0.8
13	riau	5.2	4.6	0.6
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 5  
 Transect 13  
 Total 100  
 Start At stake  
 Zero At head

Total Coverage 80.6  
 Total Length 100.0  
 Total Occurrences 19.0  
 Percent Coverage 80.60%

Site 5  
 Transect 14  
 Total 100  
 Start At stake  
 Zero At head

Total Coverage 37.4  
 Total Length 100.0  
 Total Occurrences 13.0  
 Percent Coverage 37.40%

	Species	Start	End	Total
1	syal	95.8	93.8	2.0
2	rops	76.0	53.0	23.0
3	rowo	61.3	58.5	2.8
4	rowo	57.4	57.1	0.3
5	rowo	42.8	41.0	1.8
6	rops	42.2	41.0	1.2
7	rowo	39.0	36.0	3.0
8	cost	37.9	31.0	6.9
9	rops	32.6	22.2	10.4
10	rowo	28.3	27.6	0.7
11	rowo	26.5	22.5	4.0
12	cost	24.5	16.1	8.4
13	rowo	21.5	17.2	4.3
14	rowo	16.0	13.2	2.8
15	rowo	13.0	12.0	1.0
16	rowo	10.6	10.2	0.4
17	syal	9.8	8.1	1.7
18	rowo	9.2	6.6	2.6
19	syal	7.3	4.0	3.3
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	Species	Start	End	Total
1	rops	102.2	90.8	11.4
2	rowo	99.0	94.2	4.8
3	crdo	67.3	64.8	2.5
4	rowo	52.2	48.0	4.2
5	rowo	43.8	43.4	0.4
6	syal	37.5	35.6	1.9
7	cost	28.8	27.0	1.8
8	riau	21.5	20.6	0.9
9	cost	19.8	17.5	2.3
10	rowo	18.2	17.4	0.8
11	cost	16.2	12.1	4.1
12	riau	10.5	9.3	1.2
13	riau	8.7	7.6	1.1
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 5  
 Transect 15  
 Total 100  
 Start At coverages are estimates  
 Zero At see field notes

Total Coverage 113.0  
 Total Length 100.0  
 Total Occurances 5.0  
 Percent Coverage 113.00%

Site 5  
 Transect 1  
 Total 100  
 Start At stake  
 Zero At stake

Total Coverage 70.8  
 Total Length 100.0  
 Total Occurances 10.0  
 Percent Coverage 70.80%

	Species	Start	End	Total
1	rudi			80.0
2	rowo			15.0
3	riau			10.0
4	sace			6.0
5	syal			2.0
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	Species	Start	End	Total
1	rowo	24.4	2.3	22.1
2	rowo	24.9	25.4	0.5
3	elan	25.7	42.3	16.6
4	rowo	27.3	46.4	19.1
5	riau	39.9	40.2	0.3
6	elan	54.2	61.0	6.8
7	rowo	60.9	61.6	0.7
8	chna	82.7	83.9	1.2
9	rowo	84.9	85.4	0.5
10	chna	89.0	92.0	3.0
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 5  
Transect 2  
Total 150  
Start At head  
Zero At stake

Total Coverage 158.0  
Total Length 150.0  
Total Occurrences 35.0  
Percent Coverage 105.33%

	Species	Start	End	Total
1	cost	151.5	145.9	5.6
2	rowo	149.1	137.8	11.3
3	riau	144.5	129.8	14.7
4	syal	141.4	130.7	10.7
5	rowo	121.6	128.3	6.7
6	syal	127.6	126.1	1.5
7	riau	126.9	125.0	1.9
8	rowo	124.6	121.6	3.0
9	rowo	115.5	115.0	0.5
10	rowo	114.2	113.8	0.4
11	rowo	112.3	111.6	0.7
12	rowo	98.7	92.0	6.7
13	rowo	87.9	87.5	0.4
14	riau	87.4	87.1	0.3
15	riau	85.0	79.2	5.8
16	rowo	83.3	78.5	4.8
17	riau	78.1	77.9	0.2
18	rowo	77.5	76.2	1.3
19	sace	73.6	72.8	0.8
20	rowo	73.5	73.1	0.4
21	syal	72.3	71.9	0.4
22	syal	69.6	68.1	1.5
23	rowo	68.2	61.4	6.8
24	poba	63.0	60.9	2.1
25	poba	59.5	54.1	5.4
26	rowo	58.8	55.6	3.2
27	rowo	54.5	50.4	4.1
28	riau	52.2	51.0	1.2
29	rowo	49.5	30.2	19.3
30	crdo	36.8	16.4	20.4
31	poba	38.7	34.2	4.5
32	rowo	18.5	18.0	0.5
33	potr	12.6	12.1	0.5
34	poba	9.5	3.2	6.3
35	crdo	4.1		4.1
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Site 5  
Transect 3  
Total 100  
Start At head  
Zero At stake

Total Coverage 43.5  
Total Length 100.0  
Total Occurrences 21.0  
Percent Coverage 43.50%

	Species	Start	End	Total
1	rowo	99.6	93.0	6.6
2	riau	95.2	93.5	1.7
3	rowo	92.6	91.3	1.3
4	cost	92.2	91.6	0.6
5	rowo	90.2	83.5	6.7
6	cost	87.6	84.4	3.2
7	rowo	83.1	77.9	5.2
8	rowo	76.5	75.9	0.6
9	riau	74.4	73.8	0.6
10	rowo	73.3	72.6	0.7
11	rowo	69.5	69.3	0.2
12	rowo	68.3	65.8	2.5
13	riau	67.4	66.9	0.5
14	rowo	65.4	63.6	1.8
15	rowo	62.2	59.3	2.9
16	rowo	58.5	57.0	1.5
17	rowo	54.6	54.2	0.4
18	rowo	46.5	45.9	0.6
19	poba	31.2	30.8	0.4
20	syal	30.9	29.7	1.2
21	poba	27.0	22.7	4.3
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 5  
Transect 4  
Total 100  
Start At ?  
Zero At ?

Total Coverage 52.8  
Total Length 100.0  
Total Occurrences 20.0  
Percent Coverage 52.80%

Site 5  
Transect 5  
Total 140  
Start At stake  
Zero At head

Total Coverage 80.4  
Total Length 140.0  
Total Occurrences 11.0  
Percent Coverage 57.43%

	Species	Start	End	Total
1	rowo	4.1	5.1	1.0
2	riau	4.6	7.6	3.0
3	riau	8.2	11.3	3.1
4	cost	10.5	21.0	10.5
5	rowo	11.2	12.6	1.4
6	rhgl	12.2	15.0	2.8
7	rhgl	17.0	21.8	4.8
8	syal	18.5	25.0	6.5
9	rowo	22.7	23.2	0.5
10	rowo	23.5	28.4	4.9
11	rhgl	23.3	25.5	2.2
12	rhgl	28.2	30.5	2.3
13	riau	31.3	33.0	1.7
14	rowo	46.0	46.6	0.6
15	rowo	47.5	48.0	0.5
16	sace	48.0	49.1	1.1
17	syal	57.8	59.2	1.4
18	rudi	70.8	74.2	3.4
19	cost	78.2	78.5	0.3
20	rowo	91.5	92.3	0.8
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	Species	Start	End	Total
1	artr	7.8	11.5	3.7
2	rops	16.5	39.8	23.3
3	riau	27.3	39.9	12.6
4	rops	40.5	62.6	22.1
5	jusc	42.9	44.1	1.2
6	sace	62.2	64.4	2.2
7	ropw	69.2	73.4	4.2
8	rowo	103.0	103.6	0.6
9	rowo	104.7	111.6	6.9
10	crdo	120.4	122.2	1.8
11	crdo	134.6	136.4	1.8
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 5  
 Transect 7  
 Total 40  
 Start At stake  
 Zero At head

Site           
 Transect           
 Total           
 Start At           
 Zero At         

Total Coverage 63.4  
 Total Length 140.0  
 Total Occurrences 25.0  
 Percent Coverage 45.29%

Total Coverage           
 Total Length           
 Total Occurrences           
 Percent Coverage         

	Species	Start	End	Total
1	pipo	2.3	5.1	2.8
2	rowo	4.6	4.8	0.2
3	rowo	8.5	8.7	0.2
4	pipo	9.2	9.4	0.2
5	jusc	14.2	18.7	4.5
6	lepu	29.5	29.9	0.4
7	lepu	32.2	33.3	1.1
8	beox	36.4	36.8	0.4
9	lepu	39.9	40.5	0.6
10	crdo	52.6	53.2	0.6
11	rowo	65.5	68.4	2.9
12	syal	68.7	70.4	1.7
13	rowo	71.6	73.6	2.0
14	rowo	75.7	76.4	0.7
15	rowo	79.0	79.9	0.9
16	rowo	81.1	83.2	2.1
17	rowo	84.4	85.8	1.4
18	syal	99.6	101.4	1.8
19	syal	101.7	102.2	0.5
20	rowo	106.4	119.1	12.7
21	syal	106.0	106.5	0.5
22	syal	116.5	126.4	9.9
23	cost	116.5	129.9	13.4
24	rowo	131.0	132.0	1.0
25	rowo	127.3	128.2	0.9
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	Species	Start	End	Total
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

## Trees and Shrubs

Site 6  
 Transect BS-1  
 Total 100  
 Start At east  
 Zero At west

Total Coverage 17.7  
 Total Length 100.0  
 Total Occurances 9.0  
 Percent Coverage 17.70%

	Species	Start	End	Total
1	chna	21.8	23.2	1.4
2	artr	23.1	24.1	1.0
3	chvi	24.6	24.9	0.3
4	artr	38.0	42.4	4.4
5	artr	47.2	49.5	2.3
6	artr2	58.7	60.9	2.2
7	artr2	63.5	64.5	1.0
8	artr	65.5	67.9	2.4
9	artr	77.9	80.6	2.7
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Site 6  
 Transect BS-2  
 Total 100  
 Start At   
 Zero At

Total Coverage 17.5  
 Total Length 100.0  
 Total Occurances 13.0  
 Percent Coverage 17.50%

	Species	Start	End	Total
1	teca	95.7	95.4	0.3
2	teca	89.9	88.9	1.0
3	teca	86.9	86.5	0.4
4	teca	85.7	85.0	0.7
5	teca	84.0	83.3	0.7
6	teca	80.6	80.0	0.6
7	teca	76.5	76.2	0.3
8	teca	75.4	75.0	0.4
9	artr	66.2	62.9	3.3
10	artr	50.5	46.5	4.0
11	artr	43.0	42.6	0.4
12	artr	41.1	36.5	4.6
13	teca	23.0	22.2	0.8
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 6  
 Transect BB-1  
 Total 100  
 Start At \_\_\_\_\_  
 Zero At \_\_\_\_\_

Total Coverage 22.4  
 Total Length 100.0  
 Total Occurrences 14.0  
 Percent Coverage 22.40%

Site 6  
 Transect BB-2  
 Total 100  
 Start At \_\_\_\_\_  
 Zero At \_\_\_\_\_

Total Coverage 14.5  
 Total Length 100.0  
 Total Occurrences 5.0  
 Percent Coverage 14.50%

	Species	Start	End	Total
1	artr	91.5	90.2	1.3
2	artr	88.1	86.2	1.9
3	artr	82.4	82.0	0.4
4	artr	77.4	75.3	2.1
5	artr	63.8	63.0	0.8
6	artr	57.5	56.4	1.1
7	artr	38.0	36.4	1.6
8	artr	32.4	29.0	3.4
9	artr	27.0	26.5	0.5
10	artr	20.6	18.6	2.0
11	artr	15.1	14.9	0.2
12	artr	11.7	10.5	1.2
13	artr	10.1	7.8	2.3
14	artr	3.6		3.6
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	Species	Start	End	Total
1	artr	89.5	87.3	2.2
2	putr	72.0	66.4	5.6
3	artr	42.5	38.9	3.6
4	artr	38.4	36.3	2.1
5	artr	35.5	34.5	1.0
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

## Trees and Shrubs

Site 7  
Transect R-1  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 142.4  
Total Length 100.0  
Total Occurrences 7.0  
Percent Coverage 142.40%

	Species	Start	End	Total
1	phle	5.1	9.3	4.2
2	cli	5.2	72.0	66.8
3	cost	10.5	17.6	7.1
4	cost	23.8	32.0	8.2
5	phle	29.0	72.0	43.0
6	rowo	68.2	70.0	1.8
7	phle	84.3	95.6	11.3
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Site 7  
Transect R-2  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 58.2  
Total Length 100.0  
Total Occurrences 12.0  
Percent Coverage 58.20%

	Species	Start	End	Total
1	amal		10.5	10.5
2	artr	5.2	10.4	5.2
3	phle	9.0	15.1	6.1
4	putr	15.2	16.6	1.4
5	amal	37.3	38.0	0.7
6	phle	51.8	54.6	2.8
7	artr	61.8	63.4	1.6
8	artr	65.7	67.0	1.3
9	artr	67.7	68.5	0.8
10	amal	67.6	86.5	18.9
11	artr	89.7	92.6	2.9
12	artr	94.0	100.0	6.0
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 7  
Transect BS-1  
Total 100  
Start At           
Zero At         

Total Coverage 34.3  
Total Length 100.0  
Total Occurrences 14.0  
Percent Coverage 34.30%

Site 7  
Transect BS-2  
Total 100  
Start At           
Zero At         

Total Coverage 40.2  
Total Length 100.0  
Total Occurrences 11.0  
Percent Coverage 40.20%

	Species	Start	End	Total
1	artr		1.6	1.6
2	artr	4.1	5.9	1.8
3	artr	6.9	8.6	1.7
4	artr	13.8	14.8	1.0
5	artr	17.6	21.8	4.2
6	artr	22.3	23.1	0.8
7	artr	24.0	24.5	0.5
8	artr	26.8	28.3	1.5
9	artr	11.9	44.5	2.6
10	artr	60.1	64.0	3.9
11	artr	67.6	73.8	6.2
12	artr	78.5	82.7	4.2
13	artr	85.7	87.7	2.0
14	cma	92.2	94.5	2.3
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	Species	Start	End	Total
1	putr	92.2	88.9	3.3
2	artr	72.4	71.8	0.6
3	artr	67.4	63.3	4.1
4	artr	60.2	52.3	7.9
5	artr	50.7	48.9	1.8
6	artr	42.8	36.5	6.3
7	artr	34.8	30.0	4.8
8	artr	28.5	25.5	3.0
9	artr	16.4	14.2	2.2
10	artr	12.3	10.6	1.7
11	artr	10.0	5.5	4.5
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 7  
 Transect BB-1  
 Total 100  
 Start At           
 Zero At         

Total Coverage 59.4  
 Total Length 100.0  
 Total Occurrences 23.0  
 Percent Coverage 59.40%

	Species	Start	End	Total
1	putr	100.0	86.2	13.8
2	putr	80.9	79.1	1.8
3	chna	79.9	76.8	3.1
4	lepu	77.7	76.1	1.6
5	lepu	74.7	73.2	1.5
6	lepu	71.1	70.2	0.9
7	lepu	69.8	67.5	2.3
8	artr	65.6	63.0	2.6
9	lepu	61.7	61.2	0.5
10	artr	59.3	57.8	1.5
11	lepu	52.5	49.8	2.7
12	artr	49.8	43.5	6.3
13	lepu	48.6	47.0	1.6
14	lepu	42.3	40.0	2.3
15	lepu	37.8	36.4	1.4
16	lepu	31.1	29.6	1.5
17	lepu	29.0	27.5	1.5
18	lepu	25.5	22.0	3.5
19	lepu	20.5	19.4	1.1
20	lepu	14.2	12.7	1.5
21	lepu	10.8	8.9	1.9
22	artr	10.8	6.9	3.9
23	putr	5.8	5.2	0.6
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Site 7  
 Transect BB-2  
 Total 100  
 Start At           
 Zero At         

Total Coverage 51.9  
 Total Length 100.0  
 Total Occurrences 17.0  
 Percent Coverage 51.90%

	Species	Start	End	Total
1	putr	94.5	90.7	3.8
2	putr	89.0	85.4	3.6
3	putr	81.2	71.7	9.5
4	putr	64.1	61.6	2.5
5	putr	59.5	56.5	3.0
6	lepu	56.7	55.3	1.4
7	lepu	50.9	46.7	4.2
8	putr	49.9	46.5	3.4
9	lepu	43.0	42.6	0.4
10	lepu	42.0	40.9	1.1
11	lepu	39.2	37.4	1.8
12	putr	34.5	32.3	2.2
13	lepu	33.0	30.9	2.1
14	lepu	28.5	26.0	2.5
15	putr	21.5	13.9	7.6
16	putr	12.6	11.5	1.1
17	putr	4.2	2.5	1.7
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 7  
 Transect BB-3  
 Total 100  
 Start At \_\_\_\_\_  
 Zero At \_\_\_\_\_

Site \_\_\_\_\_  
 Transect \_\_\_\_\_  
 Total \_\_\_\_\_  
 Start At \_\_\_\_\_  
 Zero At \_\_\_\_\_

Total Coverage 23.9  
 Total Length 100.0  
 Total Occurrences 9.0  
 Percent Coverage 23.90%

Total Coverage \_\_\_\_\_  
 Total Length \_\_\_\_\_  
 Total Occurrences \_\_\_\_\_  
 Percent Coverage \_\_\_\_\_

	Species	Start	End	Total
1	artr	86.6	82.4	4.2
2	putr	78.7	78.1	0.6
3	chvi	53.0	50.7	2.3
4	putr	41.4	33.2	8.2
5	lepu	27.7	26.6	1.1
6	lepu	24.5	24.0	0.5
7	lepu	23.0	22.0	1.0
8	lepu	19.2	18.5	0.7
9	putr	17.9	12.6	5.3
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	Species	Start	End	Total
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

## Trees and Shrubs

Site 9  
Transect BS-1  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 32.5  
Total Length 100.0  
Total Occurances 9.0  
Percent Coverage 32.50%

Site 9  
Transect BB-1  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 19.8  
Total Length 100.0  
Total Occurances 13.0  
Percent Coverage 19.80%

	Species	Start	End	Total
1	artr	3.4	6.4	3.0
2	chna	30.8	34.8	4.0
3	artr	43.1	44.4	1.3
4	artr	45.6	46.8	1.2
5	artr	52.4	56.2	3.8
6	artr	57.9	67.3	9.4
7	artr	70.6	71.1	0.5
8	artr	82.9	85.2	2.3
9	artr	93.0	100.0	7.0
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	Species	Start	End	Total
1	putr	98.3	97.1	1.2
2	putr	91.4	89.8	1.6
3	putr	85.7	84.4	1.3
4	artr	76.5	76.8	0.3
5	putr	68.8	67.7	1.1
6	putr	65.9	65.1	0.8
7	putr	56.9	55.6	1.3
8	putr	50.0	47.3	2.7
9	putr	46.0	42.7	3.3
10	putr	37.0	34.2	2.8
11	putr	26.5	25.4	1.1
12	artr	21.8	20.2	1.6
13	artr	9.1	8.4	0.7
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 9  
Transect R-1  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 129.5  
Total Length 100.0  
Total Occurances 27.0  
Percent Coverage 129.50%

Site 9  
Transect R-2  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 114.2  
Total Length 100.0  
Total Occurances 10.0  
Percent Coverage 114.20%

	Species	Start	End	Total
1	rowo	1.0	1.3	0.3
2	rowo	1.6	2.5	0.9
3	rowo	3.0	3.9	0.9
4	beox	5.0	15.0	10.0
5	rowo	18.0	21.5	3.5
6	rhra	23.8	24.1	0.3
7	rhra	24.5	25.4	0.9
8	rhra	26.0	27.8	1.8
9	rhgl	28.7	29.9	1.2
10	rhgl	33.2	35.0	1.8
11	rhgl	36.5	39.0	2.5
12	rowo	38.5	44.3	5.8
13	rhgl	38.6	43.9	5.3
14	rhra	38.8	40.0	1.2
15	rhra	41.4	41.5	0.1
16	rhra	42.6	45.7	3.1
17	cost	45.9	51.9	6.0
18	rowo	56.2	59.6	3.4
19	beox	51.6	61.5	9.9
20	rowo	61.5	73.5	12.0
21	rhgl	61.4	65.5	4.1
22	rhgl	72.0	76.6	4.6
23	rhgl	80.0	98.5	18.5
24	cost	86.1	90.2	4.1
25	rhra	75.0	96.8	21.8
26	rowo	91.5	95.0	3.5
27	cost	95.0	97.0	2.0
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	Species	Start	End	Total
1	beoc	100.0	69.6	30.4
2	save	96.9	93.0	3.9
3	rhra	84.0	82.2	1.8
4	rhra	77.0	75.9	1.1
5	rhra	75.4	72.3	3.1
6	beox	66.0	7.5	58.5
7	rowo	37.5	36.2	1.3
8	rhgl	35.6	35.3	0.3
9	rhra	26.0	21.5	4.5
10	rowo	17.5	8.2	9.3
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

## Trees and Shrubs

Site 11  
Transect 24  
Total 100  
Start At stake  
Zero head

Total Coverage 42.0  
Total Length 100.0  
Total Occurrences 22.0  
Percent Coverage 42.00%

Site 11  
Transect 23  
Total 140  
Start At stake  
Zero head

Total Coverage 41.8  
Total Length 140.0  
Total Occurrences 21.0  
Percent Coverage 29.86%

	Species	Start	End	Total
1	artr	102.0	97.7	4.3
2	putr	97.5	89.0	8.5
3	amal	89.9	88.9	1.0
4	rowo	89.2	87.2	2.0
5	putr	87.4	87.1	0.3
6	putr	86.1	85.2	0.9
7	amal	85.8	83.2	2.6
8	putr	83.3	81.2	2.1
9	putr	73.1	72.2	0.9
10	rhgl	71.3	69.4	1.9
11	syal	62.6	61.9	0.7
12	rowo	42.8	42.0	0.8
13	rowo	41.2	40.4	0.8
14	rowo	39.0	38.2	0.8
15	sace	37.3	37.0	0.3
16	rowo	33.0	32.4	0.6
17	rudi	25.0	24.8	0.2
18	cost	24.6	13.4	11.2
19	rudi	22.7	22.5	0.2
20	rudi	19.4	18.7	0.7
21	riau	10.7	10.3	0.4
22	cost	7.8	7.0	0.8
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	Species	Start	End	Total
1	riau	138.0	137.2	0.8
2	syal	132.0	129.5	2.5
3	syal	117.1	115.2	1.9
4	syal	107.2	106.7	0.5
5	elan	107.3	92.5	14.8
6	syal	104.2	103.7	0.5
7	cili	98.1	96.0	2.1
8	riau	94.4	91.0	3.4
9	rowo	75.5	75.0	0.5
10	rudi	75.1	72.1	3.0
11	rowo	71.5	71.4	0.1
12	rudi	63.2	62.8	0.4
13	jusc	63.7	60.0	3.7
14	elan	61.3	60.6	0.7
15	sasp	60.8	60.4	0.4
16	sace	40.6	40.1	0.5
17	crdo	35.6	34.7	0.9
18	unid1	30.0	28.1	1.9
19	jusc	23.6	20.9	2.7
20	rowo	19.0	19.3	0.3
21	rowo	3.0	2.8	0.2
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 11  
Transect 22  
Total 140  
Start At head  
Zero stake

Total Coverage 71.1  
Total Length 140.0  
Total Occurrences 21.0  
Percent Coverage 50.79%

Site 11  
Transect 21  
Total 150  
Start At head  
Zero head

Total Coverage 131.0  
Total Length 150.0  
Total Occurrences 34.0  
Percent Coverage 87.33%

	Species	Start	End	Total
1	rowo	139.3	138.6	0.7
2	rowo	137.2	135.4	1.8
3	rowo	132.6	131.9	0.7
4	cost	131.4	128.6	2.8
5	rowo	128.2	127.6	0.6
6	rowo	121.3	120.6	0.7
7	rowo	119.6	117.4	2.2
8	rowo	115.8	113.3	2.5
9	rowo	112.6	112.3	0.3
10	cost	111.5	110.4	1.1
11	elan	109.8	76.5	33.3
12	rowo	106.4	102.0	4.4
13	rowo	97.1	96.3	0.8
14	riau	100.0	89.7	10.3
15	riau	86.8	83.2	3.6
16	syai	41.5	39.3	2.2
17	syai	36.1	35.5	0.6
18	syai	34.9	34.5	0.4
19	syai	32.7	32.1	0.6
20	syai	28.1	27.5	0.6
21	elan	3.1	2.2	0.9
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	Species	Start	End	Total
1	rowo	5.3	4.6	0.7
2	rowo	8.1	7.7	0.4
3	cost	28.6	19.4	9.2
4	cost	41.8	37.2	4.6
5	rowo	41.2	38.3	2.9
6	rowo	45.6	45.2	0.4
7	rowo	56.4	55.8	0.6
8	riau	63.9	63.6	0.3
9	rudi	71.3	66.8	4.5
10	elan	75.0	71.0	4.0
11	riau	74.5	73.8	0.7
12	riau	75.1	74.8	0.3
13	elan	77.9	76.0	1.9
14	rudi	78.3	83.1	4.8
15	rowo	83.2	82.6	0.6
16	rowo	84.2	83.6	0.6
17	rudi	85.2	84.3	0.9
18	rowo	87.7	86.0	1.7
19	chna	88.5	88.1	0.4
20	rowo	89.9	89.2	0.7
21	rowo	96.0	95.6	0.4
22	rowo	99.2	98.6	0.6
23	rowo	103.2	102.0	1.2
24	rowo	105.6	103.5	2.1
25	rowo	110.0	180.9	70.9
26	rudi	123.8	123.7	0.1
27	rudi	134.0	128.1	5.9
28	elan	134.5	134.0	0.5
29	rudi	134.8	134.5	0.3
30	elan	136.6	135.8	0.8
31	elan	144.7	140.7	4.0
32	rowo	144.6	143.9	0.7
33	cost	150.0	147.3	2.7
34	rowo	149.4	148.8	0.6
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 11  
Transect 19  
Total 140  
Start At head  
Zero stake

Total Coverage 107.5  
Total Length 140.0  
Total Occurrences 34.0  
Percent Coverage 76.79%

	Species	Start	End	Total
1	rowo	134.5	132.2	2.3
2	rowo	129.7	129.2	0.5
3	riau	129.5	128.8	0.7
4	rowo	122.1	120.7	1.4
5	rowo	120.2	118.7	1.5
6	rowo	117.9	116.0	1.9
7	rowo	115.8	115.3	0.5
8	rowo	114.0	112.9	1.1
9	rowo	111.9	110.7	1.2
10	rowo	107.2	105.9	1.3
11	rowo	104.2	103.9	0.3
12	chna	102.4	101.1	1.3
13	chna	100.5	98.8	1.7
14	rowo	95.7	95.4	0.3
15	cost	92.7	88.9	3.8
16	shca	90.7	87.5	3.2
17	shca	86.3	78.9	7.4
18	rowo	79.0	78.2	0.8
19	shca	78.5	69.5	9.0
20	elan	77.1	73.7	3.4
21	rowo	72.5	67.0	5.5
22	shca	65.3	64.8	0.5
23	shca	64.3	64.1	0.2
24	rowo	64.9	64.7	0.2
25	rowo	60.4	59.1	1.3
26	rowo	57.3	55.5	1.8
27	rowo	53.6	53.2	0.4
28	rowo	49.2	48.8	0.4
29	riau	44.5	64.3	19.8
30	riau	43.7	41.2	2.5
31	rice	35.0	32.7	2.3
32	cost	30.5	26.5	4.0
33	elan	26.0	2.0	24.0
34	riau	3.0	2.0	1.0
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Site 11  
Transect 18  
Total 100  
Start At head  
Zero head

Total Coverage 69.1  
Total Length 100.0  
Total Occurrences 18.0  
Percent Coverage 69.10%

	Species	Start	End	Total
1	riau	13.1	13.4	0.3
2	cost	16.0	18.1	2.1
3	rowo	19.2	19.7	0.5
4	rowo	21.4	22.0	0.6
5	rowo	26.2	29.1	2.9
6	rowo	31.9	35.6	3.7
7	rowo	37.6	38.0	0.4
8	rowo	41.8	42.6	0.8
9	rowo	45.8	46.3	0.5
10	riau	53.5	54.4	0.9
11	rowo	58.8	61.3	2.5
12	elan	61.6	86.8	25.2
13	rowo	62.9	64.0	1.1
14	rowo	64.7	69.3	4.6
15	riau	78.2	99.2	21.0
16	putr	94.4	95.7	1.3
17	putr	102.0	102.2	0.2
18	putr	103.0	103.5	0.5
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 11  
 Transect 20  
 Total 150  
 Start At stake  
 Zero head

Total Coverage 113.6  
 Total Length 150.0  
 Total Occurances 17.0  
 Percent Coverage 75.73%

	Species	Start	End	Total
1	rudi	152.0	147.0	5.0
2	rowo	148.5	140.0	8.5
3	elan	152.0	109.0	43.0
4	rowo	135.4	132.3	3.1
5	rowo	131.5	129.5	2.0
6	riau	124.6	123.4	1.2
7	riau	108.6	106.1	2.5
8	ru	111.4	110.9	0.5
9	rowo	94.5	92.7	1.8
10	elan	90.5	79.3	11.2
11	rowo	74.7	74.1	0.6
12	rowo	71.4	70.8	0.6
13	cost	62.2	56.5	5.7
14	rowo	48.6	47.9	0.7
15	elan	37.6	36.8	0.8
16	elan	32.9	16.5	16.4
17	cost	17.8	7.8	10.0
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Site 11  
 Transect 14  
 Total 150  
 Start At stake  
 Zero head

Total Coverage 95.5  
 Total Length 150.0  
 Total Occurances 16.0  
 Percent Coverage 63.67%

	Species	Start	End	Total
1	elan	150.0	75.0	75.0
2	rudi	93.8	93.2	0.6
3	rudi	90.3	86.4	3.9
4	riau	72.1	70.8	1.3
5	rowo	70.3	69.6	0.7
6	elan	65.9	65.3	0.6
7	rowo	55.7	55.3	0.4
8	rowo	53.6	52.5	1.1
9	riau	42.3	42.0	0.3
10	riau	39.5	39.2	0.3
11	rowo	32.2	31.8	0.4
12	rowo	26.5	24.6	1.9
13	cost	22.9	20.9	2.0
14	cost	19.2	17.9	1.3
15	cost	16.2	15.2	1.0
16	cost	12.4	7.7	4.7
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 11  
Transect 17  
Total 140  
Start At head  
Zero stake

Total Coverage 34.9  
Total Length 140.0  
Total Occurrences 22.0  
Percent Coverage 24.93%

	Species	Start	End	Total
1	cost	140.0	139.0	1.0
2	rowo	123.5	122.6	0.9
3	rowo	117.6	115.8	1.8
4	rowo	113.4	111.0	2.4
5	rowo	109.0	106.8	2.2
6	rowo	106.3	104.4	1.9
7	rowo	99.6	97.6	2.0
8	rowo	94.5	91.7	2.8
9	rowo	90.2	88.8	1.4
10	elan	84.3	73.7	10.6
11	sace	77.9	77.4	0.5
12	rowo	73.9	73.5	0.4
13	rowo	54.7	53.6	1.1
14	rowo	52.7	52.3	0.4
15	rowo	45.3	44.9	0.4
16	rowo	39.6	39.4	0.2
17	rowo	39.0	38.8	0.2
18	rowo	31.3	31.0	0.3
19	rowo	30.0	29.5	0.5
20	rowo	26.7	25.8	0.9
21	rowo	24.8	24.4	0.4
22	cost	15.8	13.2	2.6
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Site 11  
Transect 16  
Total 100  
Start At stake  
Zero stake

Total Coverage 11.7  
Total Length 100.0  
Total Occurrences 6.0  
Percent Coverage 11.70%

	Species	Start	End	Total
1	artr	5.6	8.4	2.8
2	chna	34.6	34.3	0.3
3	sasp	40.5	42.1	1.6
4	syal	50.3	52.0	1.7
5	rowo	78.8	79.0	0.2
6	cost	85.3	90.4	5.1
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 11  
Transect 15  
Total 150  
Start At stake  
Zero head

Total Coverage 38.6  
Total Length 150.0  
Total Occurances 7.0  
Percent Coverage 25.73%

	Species	Start	End	Total
1	elan	149.0	143.7	5.3
2	elan	135.0	115.0	20.0
3	elan	106.2	104.0	2.2
4	elan	103.4	102.7	0.7
5	chna	36.4	31.6	4.8
6	cost	30.1	25.6	4.5
7	rowo	8.6	7.5	1.1
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Site 11  
Transect 13  
Total 120  
Start At stake  
Zero head

Total Coverage 50.7  
Total Length 120.0  
Total Occurances 29.0  
Percent Coverage 42.25%

	Species	Start	End	Total
1	elan	118.0	103.7	14.3
2	riau	116.6	115.6	1.0
3	clia	114.0	108.4	5.6
4	cost	78.8	71.8	7.0
5	riau	72.2	67.9	4.3
6	rice	71.4	70.2	1.2
7	riau	66.7	65.8	0.9
8	rowo	65.8	65.5	0.3
9	rowo	64.1	63.8	0.3
10	elan	63.4	61.8	1.6
11	rowo	61.4	60.9	0.5
12	rowo	59.9	59.7	0.2
13	rowo	57.3	56.9	0.4
14	cost	47.3	46.1	1.2
15	rowo	46.2	45.9	0.3
16	rowo	45.0	44.2	0.8
17	rowo	43.3	42.1	1.2
18	syal	42.3	41.1	1.2
19	rowo	36.9	36.6	0.3
20	rowo	35.8	35.5	0.3
21	rowo	34.2	33.9	0.3
22	rowo	29.1	28.3	0.8
23	rowo	27.3	26.6	0.7
24	rowo	24.6	24.3	0.3
25	rowo	19.6	19.0	0.6
26	rowo	12.2	11.9	0.3
27	syal	9.9	9.1	0.8
28	rowo	8.8	6.2	2.6
29	rudi	5.3	3.9	1.4
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 11  
 Transect 12  
 Total 100  
 Start At head  
 Zero stake

Total Coverage 8.6  
 Total Length 100.0  
 Total Occurances 6.0  
 Percent Coverage 8.60%

	Species	Start	End	Total
1	syal	50.5	50.0	0.5
2	syal	22.5	21.7	0.8
3	rowo	21.7	21.3	0.4
4	rowo	19.5	19.2	0.3
5	cost	18.0	13.8	4.2
6	cost	10.4	8.0	2.4
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Site 11  
 Transect 11  
 Total 100  
 Start At stake  
 Zero stake

Total Coverage 6.5  
 Total Length 100.0  
 Total Occurances 9.0  
 Percent Coverage 6.50%

	Species	Start	End	Total
1	pipu	10.0	10.3	0.3
2	rowo	56.4	57.0	0.6
3	rowo	58.8	60.0	1.2
4	rowo	70.0	70.2	0.2
5	cost	77.9	78.1	0.2
6	cost	80.0	80.5	0.5
7	cost	82.1	83.4	1.3
8	rowo	83.8	85.0	1.2
9	cost	88.5	89.5	1.0
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 11  
Transect 10  
Total 100  
Start At ?  
Zero ?

Total Coverage 12.0  
Total Length 100.0  
Total Occurrences 6.0  
Percent Coverage 12.00%

	Species	Start	End	Total
1	rowo	16.4	19.3	2.9
2	rowo	25.2	25.4	0.2
3	rowo	36.4	37.6	1.2
4	rowo	39.2	43.8	4.6
5	rowo	61.5	62.0	0.5
6	syal	83.3	85.9	2.6
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Site 11  
Transect 9  
Total 100  
Start At ?  
Zero ?

Total Coverage 2.5  
Total Length 100.0  
Total Occurrences 5.0  
Percent Coverage 2.50%

	Species	Start	End	Total
1	rowo	15.9	16.2	0.3
2	rowo	20.2	20.4	0.2
3	rowo	21.1	22.0	0.9
4	rowo	34.5	34.8	0.3
5	syal	37.9	38.7	0.8
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 11  
Transect 8  
Total 100  
Start At head  
Zero head

Total Coverage 13.0  
Total Length 100.0  
Total Occurances 9.0  
Percent Coverage 13.00%

Site 11  
Transect 7  
Total 100  
Start At head  
Zero head

Total Coverage 8.6  
Total Length 100.0  
Total Occurances 11.0  
Percent Coverage 8.60%

	Species	Start	End	Total
1	rowo	23.7	24.1	0.4
2	rowo	25.0	25.4	0.4
3	rowo	29.6	30.1	0.5
4	rowo	31.2	34.9	3.7
5	caar	35.6	38.2	2.6
6	bepa	58.2	58.7	0.5
7	rowo	80.1	80.4	0.3
8	rowo	81.7	82.5	0.8
9	chna	98.2	102.0	3.8
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	Species	Start	End	Total
1	syal	14.3	15.9	1.6
2	rowo	16.0	16.7	0.7
3	rowo	19.1	19.3	0.2
4	rowo	25.3	25.9	0.6
5	caar	39.5	39.6	0.1
6	cost	41.9	42.8	0.9
7	caar	49.0	48.4	0.6
8	rowo	51.2	52.6	1.4
9	rowo	54.4	55.0	0.6
10	syal	64.3	66.0	1.7
11	syal	77.5	77.7	0.2
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 11  
Transect 6  
Total 100  
Start At head  
Zero head

Total Coverage 23.0  
Total Length 100.0  
Total Occurances 10.0  
Percent Coverage 23.00%

	Species	Start	End	Total
1	cost	8.2	8.5	0.3
2	cost	16.5	21.8	5.3
3	rowo	27.8	32.3	4.5
4	rowo	33.3	33.6	0.3
5	rowo	37.8	38.6	0.8
6	rudi	40.2	41.4	1.2
7	rudi	54.9	55.8	0.9
8	rudi	58.9	59.1	0.2
9	cost	61.3	64.6	3.3
10	poba	76.6	82.8	6.2
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Site 11  
Transect 5  
Total 100  
Start At head  
Zero stake

Total Coverage 20.6  
Total Length 100.0  
Total Occurances 10.0  
Percent Coverage 20.60%

	Species	Start	End	Total
1	rowo	95.8	95.3	0.5
2	rowo	91.4	91.0	0.4
3	rowo	75.8	75.0	0.8
4	caar	66.4	65.4	1.0
5	d	59.8	58.5	1.3
6	chna	42.0	39.6	2.4
7	elan	43.4	35.1	8.3
8	syal	32.6	30.6	2.0
9	rowo	18.4	17.1	1.3
10	rowo	16.7	14.1	2.6
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 11  
Transect 4  
Total 150  
Start At ?  
Zero ?

Total Coverage  
Total Length 100.0  
Total Occurrences  
Percent Coverage

Site 11  
Transect 3  
Total 100  
Start At stake  
Zero head

Total Coverage  
Total Length 100.0  
Total Occurrences  
Percent Coverage

	Species	Start	End	Total
1	rowo	143.3	142.1	1.2
2	rowo	141.4	139.9	1.5
3	riau	138.4	137.5	0.9
4	rowo	138.0	134.4	3.6
5	rowo	132.8	131.4	1.4
6	rowo	130.4	129.7	0.7
7	rowo	127.1	125.8	1.3
8	riau	126.0	125.7	0.3
9	rowo	124.1	123.9	0.2
10	rowo	123.1	122.9	0.2
11	rowo	121.9	121.0	0.9
12	cost	118.9	114.3	4.6
13	rowo	116.6	116.3	0.3
14	rowo	112.5	111.2	1.3
15	rowo	109.8	106.0	3.8
16	rowo	99.5	99.3	0.2
17	syal	99.1	98.4	0.7
18	rudi	96.8	96.3	0.5
19	rowo	95.0	94.3	0.7
20	rudi	90.7	89.9	0.8
21	rudi	89.1	88.6	0.5
22	rowo	85.9	85.6	0.3
23	rowo	82.9	82.2	0.7
24	rudi	64.2	63.8	0.4
25	rowo	56.0	55.6	0.4
26	rowo	55.2	55.0	0.2
27	rowo	50.1	49.1	1.0
28	rowo	43.8	43.6	0.2
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	Species	Start	End	Total
1	bepa	100.7	96.7	4.0
2	poba	95.3	93.9	1.4
3	rudi	94.2	93.3	0.9
4	rowo	93.1	92.0	1.1
5	rowo	91.1	86.6	4.5
6	cost	83.8	81.0	2.8
7	rowo	80.6	78.0	2.6
8	rowo	73.1	71.6	1.5
9	rowo	70.1	69.6	0.5
10	rowo	65.4	63.4	2.0
11	chna	63.4	60.8	2.6
12	rowo	59.4	57.2	2.2
13	rowo	34.6	34.0	0.6
14	rowo	25.6	25.4	0.2
15	rowo	20.9	19.7	1.2
16	syal	16.4	14.6	1.8
17	rowo	13.4	13.0	0.4
18	rowo	5.3	4.7	0.6
19	cost	4.9	2.0	2.9
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 11  
Transect 1  
Total 150  
Start At stake  
Zero head

Total Coverage \_\_\_\_\_  
Total Length 100.0  
Total Occurrences \_\_\_\_\_  
Percent Coverage \_\_\_\_\_

Site 11  
Transect 2  
Total 150  
Start At stake  
Zero head

Total Coverage \_\_\_\_\_  
Total Length 100.0  
Total Occurrences \_\_\_\_\_  
Percent Coverage \_\_\_\_\_

	Species	Start	End	Total
1	cost	145.6	145.0	0.6
2	jusc	138.0	137.2	0.8
3	riau	138.0	137.2	0.8
4	cost	134.5	133.5	1.0
5	amal	132.7	131.8	0.9
6	riau	130.2	128.9	1.3
7	rowo	124.4	124.1	0.3
8	rowo	111.6	111.4	0.2
9	riau	109.7	108.6	1.1
10	elan	95.2	79.3	15.9
11	cli	87.8	87.2	0.6
12	rowo	84.0	83.4	0.6
13	riau	73.0	72.7	0.3
14	rowo	68.4	68.1	0.3
15	syal	67.5	67.1	0.4
16	rowo	66.5	65.6	0.9
17	rowo	63.8	61.7	2.1
18	rowo	57.7	55.4	2.3
19	rowo	54.2	53.5	0.7
20	rowo	52.3	50.9	1.4
21	chna	45.3	44.5	0.8
22	rowo	39.6	38.9	0.7
23	rowo	29.3	28.6	0.7
24	jusc	28.4	28.2	0.2
25	jusc	27.4	26.4	1.0
26	unid1	22.2	20.9	1.3
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	Species	Start	End	Total
1	elan	152.0	147.0	5.0
2	syal	147.9	146.0	1.9
3	sacr	107.0	106.3	0.7
4	rowo	97.8	97.1	0.7
5	rowo	93.9	93.6	0.3
6	rowo	91.6	91.3	0.3
7	rowo	86.2	86.0	0.2
8	rudu	83.0	79.4	3.6
9	elan	79.0	77.5	1.5
10	cli	77.7	76.9	0.8
11	elan	75.9	62.7	13.2
12	cost	77.8	69.6	8.2
13	rudi	78.0	76.5	1.5
14	rowo	71.2	70.4	0.8
15	rowo	65.3	64.9	0.4
16	syal	55.5	55.1	0.4
17	syal	53.4	52.9	0.5
18	syal	52.4	51.6	0.8
19	cost	38.8	27.2	11.6
20	syal	26.5	26.1	0.4
21	riau	19.7	18.2	1.5
22	syal	16.4	13.3	3.1
23	cost	13.0	5.0	8.0
24	cost	4.0	3.5	0.5
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

## Trees and Shrubs

Site 12  
Transect 1  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 72.0  
Total Length 100.0  
Total Occurrences 18.0  
Percent Coverage 72.00%

Site 12  
Transect 2  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 63.5  
Total Length 100.0  
Total Occurrences 12.0  
Percent Coverage 63.50%

	Species	Start	End	Total
1	rudl	2.6	3.2	0.6
2	crna	4.1	6.3	2.2
3	rudl	4.1	5.8	1.7
4	syal	7.7	9.4	1.7
5	rudl	9.7	24.9	15.2
6	rowo	23.0	22.4	0.6
7	rowo	24.1	36.0	11.9
8	rudl	35.1	37.7	2.6
9	riau	35.3	38.8	3.5
10	rops	35.5	40.8	5.3
11	syal	39.6	40.8	1.2
12	syal	41.1	42.4	1.3
13	ropw	44.2	51.2	7.0
14	sace	46.4	48.0	1.6
15	syal	54.6	56.5	1.9
16	sace	62.2	69.2	7.0
17	sace	70.5	76.8	6.3
18	prvi	96.3	96.7	0.4
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	Species	Start	End	Total
1	rowo	50.7	49.1	1.6
2	riau	49.4	48.5	0.9
3	rudl	42.4	39.7	2.7
4	rudl	37.1	35.0	2.1
5	elan	8.0	27.0	19.0
6	rudl	32.0	25.5	6.5
7	rowo	25.8	24.0	1.8
8	rudl	24.2	12.5	11.7
9	rowo	12.5	8.0	4.5
10	sace	20.5	13.5	7.0
11	rowo	1.9	3.6	1.7
12	rowo	4.0	8.0	4.0
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 12  
Transect 3  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 41.9  
Total Length 100.0  
Total Occurrences 16.0  
Percent Coverage 41.90%

Site 12  
Transect 4  
Total 100  
Start At \_\_\_\_\_  
Zero At \_\_\_\_\_

Total Coverage 95.1  
Total Length 100.0  
Total Occurrences 18.0  
Percent Coverage 95.07%

	Species	Start	End	Total
1	rowo	2.5	5.3	2.8
2	rowo	7.4	9.3	1.9
3	rowo	10.4	11.6	1.2
4	rowo	18.8	19.0	0.2
5	rowo	24.6	27.0	2.4
6	rowo	29.8	31.2	1.4
7	syal	31.1	32.4	1.3
8	syal	34.6	37.7	3.1
9	rudi	35.8	37.2	1.4
10	rudi	37.7	47.5	9.8
11	cost	39.8	47.1	7.3
12	rudi	49.6	51.6	2.0
13	rudi	55.8	57.5	1.7
14	riau	57.4	59.8	2.4
15	rowo	67.3	69.2	1.9
16	syal	95.5	96.6	1.1
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	Species	Start	End	Total
1	rowo		22.5	22.5
2	cost	3.0	18.1	15.1
3	cost		1.5	1.5
4	sace	23.7	24.2	0.5
5	rowo	22.7	26.2	3.5
6	rowo	27.2	30.4	3.2
7	riau	32.2	34.0	1.8
8	rowo	36.5	37.6	1.1
9	elan	37.2	49.7	12.5
10	riau	46.0	50.4	4.4
11	syal	50.6	53.0	2.4
12	rudi	51.5	53.6	2.1
13	rudi	54.3	65.8	11.5
14	sace	65.7	73.7	8.0
15	amal	65.6	68.2	2.6
16	elan	69.7	70.2	0.5
17	rudi	75.1	76.1	1.0
18	syal	75.6	76.5	0.9
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 12  
Transect 5  
Total 100  
Start At  
Zero At

Total Coverage 47.3  
Total Length 100.0  
Total Occurances 15.0  
Percent Coverage 47.30%

	Species	Start	End	Total
1	riau	3.0	3.1	0.1
2	riau	5.2	8.0	2.8
3	cost	5.9	8.9	3.0
4	cost	9.5	13.1	3.6
5	rowo	13.1	14.1	1.0
6	rops	14.6	34.0	19.4
7	rowo	28.6	30.1	1.5
8	rowo	62.7	64.2	1.5
9	rops	67.8	72.8	5.0
10	rowo	69.3	73.2	3.9
11	rowo	74.1	74.7	0.6
12	rowo	76.0	78.8	2.8
13	roso	82.1	83.1	1.0
14	rowo	84.9	85.6	0.7
15	cili	96.7	97.1	0.4
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Site 12  
Transect 6  
Total 100  
Start At  
Zero At

Total Coverage 79.4  
Total Length 100.0  
Total Occurances 26.0  
Percent Coverage 79.40%

	Species	Start	End	Total
1	rowo	3.8	3.9	0.1
2	sace	5.5	5.8	0.3
3	rowo	5.3	5.6	0.3
4	rowo	6.2	13.9	7.7
5	shca	9.6	10.3	0.7
6	shca	10.7	12.3	1.6
7	shca	12.8	13.2	0.4
8	shca	14.3	14.6	0.3
9	rowo	15.0	16.5	1.5
10	shca	16.5	18.0	1.5
11	rowo	17.1	19.9	2.8
12	rowo	20.4	21.3	0.9
13	shca	21.3	22.1	0.8
14	rowo	22.4	23.3	0.9
15	rowo	26.9	28.8	1.9
16	elan	26.8	45.8	19.0
17	riau	29.7	31.0	1.3
18	rowo	33.8	36.5	2.7
19	rowo	38.1	42.7	4.6
20	riau	42.9	53.3	10.4
21	elan	50.5	52.0	1.5
22	rowo	52.0	55.3	3.3
23	elan	53.1	61.0	7.9
24	cost	55.0	57.0	2.0
25	crdo	65.8	66.3	0.5
26	rhtr	68.0	72.5	4.5
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 12  
Transect 7  
Total 100  
Start At stake  
Zero At head

Total Coverage 35.4  
Total Length 100.0  
Total Occurances 7.0  
Percent Coverage 35.40%

Site 12  
Transect 8  
Total 100  
Start At   
Zero At

Total Coverage 44.2  
Total Length 100.0  
Total Occurances 14.0  
Percent Coverage 44.20%

	Species	Start	End	Total
1	rops	71.0	45.0	26.0
2	rops	37.0	36.3	0.7
3	rowo	24.7	26.3	1.6
4	rowo	27.4	21.8	5.6
5	riau	11.5	11.3	0.2
6	riau	10.9	10.8	0.1
7	riau	9.7	8.5	1.2
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	Species	Start	End	Total
1	riau	95.4	92.8	2.6
2	syai	93.5	90.9	2.6
3	rowo	90.3	88.9	1.4
4	rowo	84.6	74.5	10.1
5	riau	83.5	81.8	1.7
6	rowo	73.6	72.1	1.5
7	rowo	71.4	66.8	4.6
8	riau	68.0	57.9	10.1
9	rowo	58.0	56.2	1.8
10	syai	31.1	29.7	1.4
11	rowo	30.3	29.0	1.3
12	rowo	27.8	27.0	0.8
13	riau	25.5	23.5	2.0
14	rowo	21.6	19.3	2.3
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 12  
Transect 9  
Total 100  
Start At  
Zero At

Total Coverage 85.8  
Total Length 100.0  
Total Occurances 19.0  
Percent Coverage 85.80%

Site 12  
Transect 10  
Total 100  
Start At  
Zero At

Total Coverage 90.0  
Total Length 100.0  
Total Occurances 12.0  
Percent Coverage 90.00%

	Species	Start	End	Total
1	syal	97.0	91.2	5.8
2	syal	86.0	84.0	2.0
3	elan	85.4	59.0	26.4
4	syal	83.0	80.5	2.5
5	rowo	72.3	70.8	1.5
6	riau	70.8	69.1	1.7
7	rowo	68.2	60.7	7.5
8	cost	50.3	49.5	0.8
9	rudi	49.2	46.8	2.4
10	cost	47.4	44.3	3.1
11	rudi	43.5	43.1	0.4
12	elan	43.7	24.8	18.9
13	rowo	36.1	33.0	3.1
14	rowo	31.0	27.4	3.6
15	rowo	26.3	24.2	2.1
16	rowo	22.0	21.3	0.7
17	syal	21.3	19.2	2.1
18	rops	17.0	16.5	0.5
19	syal	9.9	9.2	0.7
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	Species	Start	End	Total
1	rowo	1.0	4.1	3.1
2	rowo	4.6	13.2	8.6
3	rowo	13.6	17.7	4.1
4	riau	15.8	17.6	1.8
5	cost	16.8	23.8	7.0
6	rowo	21.8	22.6	0.8
7	unid7	26.6	35.8	9.2
8	syal	35.0	38.7	3.7
9	rops	37.5	65.4	27.9
10	riau	52.2	53.0	0.8
11	syal	67.7	69.3	1.6
12	rops	79.6	101.0	21.4
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 12  
Transect 11  
Total 100  
Start At  
Zero At

Total Coverage 54.8  
Total Length 100.0  
Total Occurrences 23.0  
Percent Coverage 54.80%

Site 12  
Transect 12  
Total 100  
Start At  
Zero At

Total Coverage 62.1  
Total Length 100.0  
Total Occurrences 16.0  
Percent Coverage 62.10%

	Species	Start	End	Total
1	rowo	2.0	4.5	2.5
2	rowo	9.5	11.1	1.6
3	rowo	12.8	14.7	1.9
4	rops	19.0	35.3	16.3
5	rowo	24.0	24.4	0.4
6	rowo	33.9	35.0	1.1
7	riau	35.0	37.4	2.4
8	uan	37.0	42.5	5.5
9	rowo	41.4	43.0	1.6
10	rowo	43.4	45.0	1.6
11	rowo	46.4	46.8	0.4
12	rowo	52.0	52.5	0.5
13	cost	62.0	67.9	5.9
14	cost	70.2	71.6	1.4
15	rowo	74.0	75.8	1.8
16	rowo	76.3	76.8	0.5
17	cost	76.2	79.0	2.8
18	rowo	81.0	81.4	0.4
19	riau	81.7	82.7	1.0
20	rowo	84.0	87.2	3.2
21	rowo	88.1	88.3	0.2
22	rowo	89.8	90.1	0.3
23	rowo	97.7	99.2	1.5
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	Species	Start	End	Total
1	rowo	1.1	2.1	1.0
2	rowo	4.8	6.0	1.2
3	rowo	6.6	8.4	1.8
4	syal	7.4	15.6	8.2
5	unid1	17.3	19.6	2.3
6	caar	49.0	49.6	0.6
7	caar	50.0	50.4	0.4
8	caar	52.2	52.9	0.7
9	syal	53.5	55.1	1.6
10	rudi	70.9	71.5	0.6
11	cost	79.0	83.4	4.4
12	rudi	77.8	80.6	2.8
13	rowo	83.5	100.0	16.5
14	rudi	83.2	85.7	2.5
15	rudi	87.7	81.6	6.1
16	rops	88.6	100.0	11.4
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 12  
Transect 13  
Total 100  
Start At  
Zero At

Total Coverage 83.9  
Total Length 100.0  
Total Occurrences 16.0  
Percent Coverage 83.90%

Site 12  
Transect 14  
Total 100  
Start At  
Zero At

Total Coverage 43.5  
Total Length 100.0  
Total Occurrences 16.0  
Percent Coverage 43.50%

	Species	Start	End	Total
1	elan	91.5	79.0	12.5
2	unid1	80.1	77.3	2.8
3	rowo	66.6	65.7	0.9
4	rowo	61.6	60.6	1.0
5	rowo	58.4	58.0	0.4
6	rowo	57.2	56.8	0.4
7	rowo	33.7	33.5	0.2
8	rowo	27.3	25.8	1.5
9	syal	24.4	74.2	49.8
10	syal	20.7	20.3	0.4
11	rowo	19.9	19.2	0.7
12	rowo	15.1	14.9	0.2
13	rowo	12.1	11.8	0.3
14	cost	12.0	3.5	8.5
15	rowo	10.3	8.7	1.6
16	rowo	7.5	4.8	2.7
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	Species	Start	End	Total
1	riau	6.0	9.6	3.6
2	rowo	6.3	7.4	1.1
3	rowo	8.5	12.4	3.9
4	syal	12.8	15.6	2.8
5	rowo	18.1	18.8	0.7
6	rowo	19.1	23.3	4.2
7	riau	21.7	26.7	5.0
8	syal	28.4	30.1	1.7
9	syal	30.3	30.7	0.4
10	syal	34.6	36.1	1.5
11	rowo	52.0	54.1	2.1
12	elan	54.1	64.2	10.1
13	crna	66.0	69.0	3.0
14	crna	70.3	71.1	0.8
15	rowo	84.8	84.9	0.1
16	crna	96.5	99.0	2.5
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 12  
 Transect 15  
 Total 100  
 Start At \_\_\_\_\_  
 Zero At \_\_\_\_\_

Site \_\_\_\_\_  
 Transect \_\_\_\_\_  
 Total \_\_\_\_\_  
 Start At \_\_\_\_\_  
 Zero At \_\_\_\_\_

Total Coverage 57.1  
 Total Length 100.0  
 Total Occurrences 23.0  
 Percent Coverage 57.10%

Total Coverage \_\_\_\_\_  
 Total Length \_\_\_\_\_  
 Total Occurrences \_\_\_\_\_  
 Percent Coverage \_\_\_\_\_

	Species	Start	End	Total
1	cost		11.2	11.2
2	rowo		1.2	1.2
3	rowo	1.9	2.5	0.6
4	rowo	4.0	10.8	6.8
5	rowo	13.3	16.6	3.3
6	rowo	19.5	20.0	0.5
7	rowo	20.4	20.7	0.3
8	unid1	26.0	29.2	3.2
9	rowo	26.8	28.2	1.4
10	crna	33.3	35.4	2.1
11	rowo	52.2	52.4	0.2
12	rowo	54.8	55.8	1.0
13	rowo	56.3	57.7	1.4
14	rowo	58.3	58.5	0.2
15	rowo	62.5	62.8	0.3
16	rowo	66.3	67.2	0.9
17	rowo	68.2	69.0	0.8
18	rowo	70.2	70.5	0.3
19	rowo	71.1	71.6	0.5
20	rowo	73.9	74.4	0.5
21	unid1	74.6	75.2	0.6
22	jusc	80.0	81.3	1.3
23	rops	79.0	97.5	18.5
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	Species	Start	End	Total
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

## Trees and Shrubs

Site 15  
Transect 1  
Total 100  
Start At head  
Zero At stake

Total Coverage 32.6  
Total Length 100.0  
Total Occurrences 9.0  
Percent Coverage 32.60%

	Species	Start	End	Total
1	syal	40.1	38.1	2.0
2	elan	33.9	29.6	4.3
3	poba	33.9	33.1	0.8
4	rowo	30.4	31.6	1.2
5	riau	29.4	25.8	3.6
6	riau	22.9	21.5	1.4
7	elan	20.5	11.6	8.9
8	pipo	13.4	5.5	7.9
9	elan	2.5		2.5
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Site 15  
Transect 2  
Total 100  
Start At head  
Zero At stake

Total Coverage 40.5  
Total Length 100.0  
Total Occurrences 11.0  
Percent Coverage 40.50%

	Species	Start	End	Total
1	rowo	100.7	100.0	0.7
2	rowo	91.1	90.9	0.2
3	syal	76.1	74.9	1.2
4	syal	67.1	66.3	0.8
5	riau	64.0	62.9	1.1
6	elan	65.3	62.6	2.7
7	caar	63.5	56.0	7.5
8	rudi	61.3	60.8	0.5
9	elan	23.0	12.0	11.0
10	elan	12.0		12.0
11	jusc	11.0	8.2	2.8
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 15  
Transect 3  
Total 100  
Start At head  
Zero At stake

Total Coverage 66.7  
Total Length 100.0  
Total Occurances 11.0  
Percent Coverage 66.70%

Site 15  
Transect 4  
Total 100  
Start At stake  
Zero At stake

Total Coverage 24.2  
Total Length 100.0  
Total Occurances 11.0  
Percent Coverage 24.20%

	Species	Start	End	Total
1	rowo	86.4	85.5	0.9
2	rowo	84.4	83.6	0.8
3	rowo	83.2	80.6	2.6
4	rowo	78.8	77.2	1.6
5	rowo	74.8	74.4	0.4
6	elan	72.4	55.2	17.2
7	rowo	69.8	66.2	3.6
8	elan	47.0	20.0	27.0
9	sace	42.0	32.7	9.3
10	rudl	24.2	21.7	2.5
11	crdo	10.1	9.3	0.8
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	Species	Start	End	Total
1	prsp.		2.2	2.2
2	rhgl	9.4	10.3	0.9
3	rowo	36.3	34.0	2.3
4	rowo	35.9	36.3	0.4
5	rowo	37.3	37.7	0.4
6	chvi	44.0	46.0	2.0
7	syal	56.2	56.8	0.6
8	rowo	69.8	70.7	0.9
9	rowo	71.1	71.4	0.3
10	caar	86.5	98.3	11.8
11	cost	86.4	88.8	2.4
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 15  
Transect 5  
Total 100  
Start At stake  
Zero At stake

Total Coverage 49.8  
Total Length 100.0  
Total Occurances 9.0  
Percent Coverage 49.80%

Site 15  
Transect 6  
Total 100  
Start At head  
Zero At stake

Total Coverage 25.4  
Total Length 100.0  
Total Occurances 8.0  
Percent Coverage 25.40%

	Species	Start	End	Total
1	elan	9.0	25.5	16.5
2	syai	9.5	10.2	0.7
3	syai	18.2	19.3	1.1
4	riau	19.6	26.9	7.3
5	caar	26.2	27.8	1.6
6	shca	34.9	51.7	16.8
7	rowo	53.4	54.3	0.9
8	caar	58.4	59.3	0.9
9	caar	62.0	66.0	4.0
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	Species	Start	End	Total
1	ptr	87.3	86.4	0.9
2	shca	64.5	64.3	0.2
3	rudi	64.9	64.2	0.7
4	caar	61.6	53.0	8.6
5	sace	53.7	45.5	8.2
6	crso	39.6	36.3	3.3
7	prsp.	26.7	26.0	0.7
8	ptr	12.0	9.2	2.8
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 15  
Transect 7  
Total 100  
Start At head  
Zero At stake

Total Coverage 37.0  
Total Length 100.0  
Total Occurances 8.0  
Percent Coverage 37.00%

	Species	Start	End	Total
1	rowo	85.9	84.9	1.0
2	rowo	82.4	82.1	0.3
3	syai	76.3	75.9	0.4
4	elan	59.0	45.7	13.3
5	riau	41.0	38.8	2.2
6	elan	16.6		16.6
7	cost	12.2	10.7	1.5
8	rops	2.7	1.0	1.7
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Site 15  
Transect 8  
Total 100  
Start At stake  
Zero At head

Total Coverage 35.3  
Total Length 100.0  
Total Occurances 13.0  
Percent Coverage 35.30%

	Species	Start	End	Total
1	syai	96.9	93.5	3.4
2	rudi	87.8	87.1	0.7
3	syai	87.0	84.0	3.0
4	rudi	86.6	84.9	1.7
5	cost	84.2	83.6	0.6
6	cost	80.5	80.0	0.5
7	cost	82.4	82.7	0.3
8	rudi	77.6	72.8	4.8
9	syai	76.3	75.2	1.1
10	caar	33.1	33.8	0.7
11	elan	27.2	21.6	5.6
12	elan	17.9	10.8	7.1
13	crdo	9.6	3.8	5.8
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 15  
 Transect 9  
 Total 100  
 Start At head  
 Zero At head

Site \_\_\_\_\_  
 Transect \_\_\_\_\_  
 Total \_\_\_\_\_  
 Start At \_\_\_\_\_  
 Zero At \_\_\_\_\_

Total Coverage 49.2  
 Total Length 100.0  
 Total Occurrences 16.0  
 Percent Coverage 49.20%

Total Coverage \_\_\_\_\_  
 Total Length \_\_\_\_\_  
 Total Occurrences \_\_\_\_\_  
 Percent Coverage \_\_\_\_\_

	Species	Start	End	Total
1	syal	100.0	99.3	0.7
2	elan	100.0	96.5	3.5
3	beox	98.6	86.8	11.8
4	beox	86.9	86.7	0.2
5	cma	77.2	74.9	2.3
6	beox	75.6	72.2	3.4
7	syal	70.8	58.7	12.1
8	elan	69.4	68.2	1.2
9	sace	53.3	50.9	2.4
10	rowo	41.3	40.9	0.4
11	rowo	37.3	36.1	1.2
12	syal	20.5	18.9	1.6
13	riau	15.8	11.5	4.3
14	cli	16.8	14.5	2.3
15	cli	11.6	11.2	0.4
16	riau	10.0	8.6	1.4
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	Species	Start	End	Total
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

## Trees and Shrubs

Site 18  
 Transect BS-2  
 Total 100  
 Start At south (located)  
 Zero At north (cni)

Total Coverage 28.3  
 Total Length 100.0  
 Total Occurrences 3.0  
 Percent Coverage 28.30%

	Species	Start	End	Total
1	artr	95.3	89.8	5.5
2	artr	86.6	80.6	6.0
3	artr	77.2	60.4	16.8
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Site 18  
 Transect R-1  
 Total 100  
 Start At east  
 Zero At west

Total Coverage 179.4  
 Total Length 100.0  
 Total Occurrences 19.0  
 Percent Coverage 179.40%

	Species	Start	End	Total
1	beox	100.0	72.0	28.0
2	cost	100.0	90.2	9.8
3	syal	97.2	94.4	2.8
4	syal	92.2	87.5	4.7
5	crdo	83.7	54.0	29.7
6	sodu	74.6	71.2	3.4
7	cost	71.7	68.8	2.9
8	syal	68.7	67.8	0.9
9	beox	65.5	41.2	24.3
10	syal	61.5	48.5	13.0
11	cost	54.0	37.5	16.5
12	cli	56.3	55.2	1.1
13	sasp.	56.5	55.7	0.8
14	crdo	41.2	17.0	24.2
15	cli	41.0	40.0	1.0
16	cli	38.0	35.4	2.6
17	rhgl	32.5	37.3	4.8
18	syal	36.8	35.0	1.8
19	syal	33.0	25.9	7.1
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 18  
Transect R-2  
Total 100  
Start At west  
Zero At east

Total Coverage 205.3  
Total Length 100.0  
Total Occurrences 15.0  
Percent Coverage 205.30%

	Species	Start	End	Total
1	beox	100.0	29.0	71.0
2	cost	94.6	88.8	5.8
3	cost	86.6	79.0	7.6
4	crdo	83.0	64.5	18.5
5	syai	84.2	82.0	2.2
6	syai	77.5	76.0	1.5
7	cost	48.5	38.0	10.5
8	beaq	51.2	49.8	1.4
9	syai	39.5	37.0	2.5
10	cost	36.5	20.0	16.5
11	syai	33.0		33.0
12	crdo	26.0		26.0
13	beox	13.7	12.0	1.7
14	beox	4.5		4.5
15	cost	2.6		2.6
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Site 18  
Transect BS-1  
Total 100  
Start At east  
Zero At west

Total Coverage 45.8  
Total Length 100.0  
Total Occurrences 9.0  
Percent Coverage 45.80%

	Species	Start	End	Total
1	artr	99.5	99.0	0.5
2	artr	92.2	91.7	0.5
3	artr	89.6	78.1	11.5
4	artr	74.7	64.2	10.5
5	artr	35.0	30.0	5.0
6	artr	26.2	24.9	1.3
7	artr2	20.0	17.0	3.0
8	artr	18.0	17.2	0.8
9	artr	12.7		12.7
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 18  
Transect R-3  
Total 100  
Start At north  
Zero At south

Total Coverage 16.4  
Total Length 100.0  
Total Occurrences 9.0  
Percent Coverage 76.40%

	Species	Start	End	Total
1	amal	100.0	85.6	14.4
2	amal	70.0	61.0	9.0
3	phle	62.8	60.8	2.0
4	phle	58.5	16.8	41.7
5	hodi	51.0	49.7	1.3
6	rice	45.0	42.0	3.0
7	rice	37.5	35.9	1.6
8	crna	20.8	18.4	2.4
9	artr	16.0	15.0	1.0
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Site 18  
Transect BS-3  
Total 100  
Start At north (cnl)  
Zero At south (located)

Total Coverage 31.2  
Total Length 100.0  
Total Occurrences 11.0  
Percent Coverage 31.20%

	Species	Start	End	Total
1	artr	100.0	96.2	3.8
2	artr	92.0	87.7	4.3
3	artr	70.6	69.9	0.7
4	artr	68.8	65.1	3.7
5	artr	63.7	58.3	5.4
6	crna	49.6	47.7	1.9
7	artr	47.1	43.3	3.8
8	artr	38.7	37.8	0.9
9	artr	23.3	21.8	1.5
10	artr	15.8	14.1	1.7
11	artr	12.7	9.2	3.5
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 18  
Transect BB-2  
Total 100  
Start At north  
Zero At north

Total Coverage 23.4  
Total Length 100.0  
Total Occurances 6.0  
Percent Coverage 23.40%

	Species	Start	End	Total
1	ptr	28.6	32.0	3.4
2	ptr	34.0	40.4	6.4
3	ptr	42.4	47.5	5.1
4	artr	83.2	84.3	1.1
5	ptr	89.1	90.7	1.6
6	artr	94.2	100.0	5.8
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Site 18  
Transect BB-1  
Total 100  
Start At east  
Zero At west

Total Coverage 51.9  
Total Length 100.0  
Total Occurances 12.0  
Percent Coverage 51.92%

	Species	Start	End	Total
1	artr	92.2	89.4	2.8
2	artr	84.7	81.7	3.0
3	artr	76.8	71.5	5.3
4	artr	63.6	63.2	0.4
5	ptr	53.2	48.8	4.4
6	artr	48.8	47.6	1.2
7	artr	46.0	39.4	6.6
8	ptr	36.6	29.3	7.3
9	artr	29.3	26.8	2.5
10	ptr	27.8	22.7	5.1
11	artr	20.6	20.1	0.5
12	artr	15.8	3.0	12.8
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

## Trees and Shrubs

Site 20  
Transect R-2  
Total 100  
Start At north  
Zero At south

Total Coverage 102.2  
Total Length 100.0  
Total Occurances 4.0  
Percent Coverage 102.20%

	Species	Start	End	Total
1	crdo	100.0	18.5	81.5
2	rowo	72.5	70.8	1.7
3	rowo	66.0	64.0	2.0
4	amal	17.0		17.0
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Site 20  
Transect BS-2  
Total 100  
Start At south  
Zero At south

Total Coverage 37.7  
Total Length 100.0  
Total Occurances 12.0  
Percent Coverage 37.70%

	Species	Start	End	Total
1	artr2		1.5	1.5
2	artr2	5.4	6.2	0.8
3	artr2	14.1	19.9	5.8
4	artr2	22.4	25.3	2.9
5	artr2	28.8	29.6	0.8
6	artr2	41.2	43.2	2.0
7	artr2	46.3	50.4	4.1
8	rowo	51.5	54.5	3.0
9	artr2	65.2	66.9	1.7
10	artr2	77.0	80.0	3.0
11	artr2	81.0	88.8	7.8
12	artr2	93.6	97.9	4.3
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 20  
Transect BS-1  
Total 100  
Start At west  
Zero At east

Total Coverage 12.3  
Total Length 100.0  
Total Occurrences 9.0  
Percent Coverage 12.33%

Site 20  
Transect R-1  
Total 100  
Start At west (under water)  
Zero At east (under water)

Total Coverage 98.9  
Total Length 100.0  
Total Occurrences 9.0  
Percent Coverage 98.90%

	Species	Start	End	Total
1	artr	100.0	99.0	1.0
2	artr	98.0	94.4	3.6
3	cma	95.9	95.4	0.5
4	prtr	88.0	87.3	0.7
5	artr	86.4	85.7	0.7
6	artr	42.3	41.6	0.7
7	artr	37.4	35.4	2.0
8	artr	33.2	32.2	1.0
9	artr	10.5	8.4	2.1
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	Species	Start	End	Total
1	crdo	94.7	92.2	2.5
2	prtr	88.4	87.9	0.5
3	crdo	85.5	82.0	3.5
4	crdo	73.0	54.0	19.0
5	prtr	54.9	53.5	1.4
6	cli	60.0	52.5	7.5
7	crdo	50.0	48.1	1.9
8	crdo	45.9	43.3	2.6
9	crdo	40.0	100.0	60.0
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 20  
Transect R-3  
Total 100  
Start At north  
Zero At south

Total Coverage 99.2  
Total Length 100.0  
Total Occurances 6.0  
Percent Coverage 99.20%

	Species	Start	End	Total
1	phle	86.0	84.2	1.8
2	phle	82.5	70.0	12.5
3	amal	80.2	46.7	33.5
4	phle	45.3	23.0	22.3
5	coot	27.6	2.5	25.1
6	phle	4.0		4.0
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Site 20  
Transect BB-1  
Total 100  
Start At east  
Zero At west

Total Coverage 138.6  
Total Length 100.0  
Total Occurances 22.0  
Percent Coverage 138.64%

	Species	Start	End	Total
1	rowo	100.0	99.8	0.2
2	clli	96.8	91.7	3.2
3	rowo	93.4	93.6	1.1
4	rowo	92.6	92.3	4.2
5	rowo	91.0	88.4	3.7
6	clli	90.4	87.3	7.2
7	prtr	85.5	83.2	0.7
8	clli	85.4	84.8	2.7
9	clli	83.7	82.7	0.2
10	rowo	84.2	83.5	4.8
11	chvi	81.5	79.4	7.0
12	chvi	79.9	74.5	7.3
13	prtr	76.6	72.6	22.4
14	prtr	63.5	54.2	11.8
15	chvi	55.1	51.8	18.3
16	prtr	37.2	36.8	4.7
17	prtr	36.1	32.5	9.4
18	chvi	27.2	26.7	11.3
19	prtr	16.6	15.9	3.5
20	chvi	13.6	13.1	7.0
21	prtr	7.7	6.6	5.3
22	chvi	2.6	2.4	2.6
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24				
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# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site 20  
 Transect BB-2  
 Total 100  
 Start At northwest  
 Zero At southeast

Site \_\_\_\_\_  
 Transect \_\_\_\_\_  
 Total \_\_\_\_\_  
 Start At \_\_\_\_\_  
 Zero At \_\_\_\_\_

Total Coverage 31.9  
 Total Length 100.0  
 Total Occurances 12.0  
 Percent Coverage 31.90%

Total Coverage \_\_\_\_\_  
 Total Length \_\_\_\_\_  
 Total Occurances \_\_\_\_\_  
 Percent Coverage \_\_\_\_\_

	Species	Start	End	Total
1	rice	100.0	92.2	7.8
2	ptr	90.2	89.3	0.9
3	ptr	84.5	77.4	7.1
4	rowo	83.3	82.7	0.6
5	rowo	81.3	78.2	3.1
6	rowo	76.9	76.1	0.8
7	ptr	74.8	73.6	1.2
8	ptr	72.2	70.3	1.9
9	ptr	57.3	53.6	3.7
10	ptr	42.0	40.1	1.9
11	ptr	28.0	26.4	1.6
12	rice	9.5	8.2	1.3
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	Species	Start	End	Total
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**Forb and Grass Cover Data**

# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site	Transect	Irrigated?	Total Cover for Transect	Species	Number of Occurrences/ Transect	Absolute %	Relative %
1	1	y	112.0%	FEOV*	10	94.0%	83.9%
1	1	y	112.0%	ME_(melelotus)	2	10.0%	8.9%
1	1	y	112.0%	MESA	1	2.5%	2.2%
1	1	y	112.0%	TRDU2	1	2.0%	1.8%
1	1	y	112.0%	LUSE	1	2.0%	1.8%
1	1	y	112.0%	HYPE	2	1.0%	0.9%
1	1	y	112.0%	TRDU	1	0.5%	0.4%
1	2	y	117.6%	FEOV*	10	83.0%	70.6%
1	2	y	117.6%	LUSE	3	14.6%	12.4%
1	2	y	117.6%	HYPE	3	13.0%	11.1%
1	2	y	117.6%	PHAR	1	4.5%	3.8%
1	2	y	117.6%	ME_(melica)	1	1.5%	1.3%
1	2	y	117.6%	Th_(theamopsis)	1	0.5%	0.4%
1	2	y	117.6%	CIAR	1	0.5%	0.4%
1	3	y	70.5%	FEOV*	7	53.5%	75.9%
1	3	y	70.5%	DAGL	2	11.0%	15.6%
1	3	y	70.5%	HYPE	3	5.5%	7.8%
1	3	y	70.5%	CIAR	1	0.5%	0.7%
1	4	y	127.0%	FEOV*	10	84.5%	66.5%
1	4	y	127.0%	HYPE	6	13.0%	10.2%
1	4	y	127.0%	SODU	2	10.5%	8.3%
1	4	y	127.0%	DAGL	3	8.5%	6.7%
1	4	y	127.0%	SOOL	2	4.5%	3.5%
1	4	y	127.0%	SOMI	2	4.0%	3.1%
1	4	y	127.0%	POCO	1	1.5%	1.2%
1	4	y	127.0%	CIAR	1	0.5%	0.4%
1	4	y	127.0%	MESA	1	0.0%	0.0%
1	5	y	94.5%	FEOV*	10	75.0%	79.4%
1	5	y	94.5%	HYPE	3	7.5%	7.9%
1	5	y	94.5%	DAGL	1	5.5%	5.8%
1	5	y	94.5%	LUSE	1	4.0%	4.2%
1	5	y	94.5%	Th_(theamopsis)	1	1.5%	1.6%
1	5	y	94.5%	TRDU	1	0.5%	0.5%
1	5	y	94.5%	POCO	1	0.5%	0.5%
3	1	y	70.0%	FEOV*	6	60.0%	85.7%
3	1	y	70.0%	BRMA	1	6.0%	8.6%
3	1	y	70.0%	UNID 13	1	4.0%	5.7%
3	2	y	103.7%	FEOV*	15	97.7%	94.2%
3	2	y	103.7%	SOOL	1	4.0%	3.9%
3	2	y	103.7%	CIAR	1	1.3%	1.3%
3	2	y	103.7%	LIDA	1	0.7%	0.6%
3	2	y	103.7%	LUSE	1	0.0%	0.0%
3	3	y	108.7%	FEOV*	15	92.7%	85.3%
3	3	y	108.7%	SOOL	4	11.7%	10.7%
3	3	y	108.7%	ME_(melelotus)	3	2.3%	2.1%
3	3	y	108.7%	CI	1	2.0%	1.8%
3	4	y	110.0%	FEOV*	10	100.0%	90.9%
3	4	y	110.0%	SOOL	5	6.5%	5.9%
3	4	y	110.0%	LASE	1	2.0%	1.8%
3	4	y	110.0%	UNID 2	1	1.5%	1.4%
3	5	y	91.7%	FEOV*	15	91.0%	99.3%
3	5	y	91.7%	FEID	1	0.7%	0.7%
3	6	y	83.5%	FEOV*	10	78.5%	94.0%
3	6	y	83.5%	SOOL	1	2.5%	3.0%

# Chief Joseph Dam Vegetation Monitoring

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Site	Transect	Irrigated?	Total Cover for Transect	Species	Number of Occurrences/ Transect	Absolute %	Relative %
3	6	y	83.5%	FEID	1	1.5%	1.8%
3	6	y	83.5%	ELCI	1	1.0%	1.2%
3	7	y	101.7%	FEOV*	14	77.3%	76.1%
3	7	y	101.7%	ELCI	2	9.3%	9.2%
3	7	y	101.7%	ME_(melica)	3	5.7%	5.6%
3	7	y	101.7%	UNID9	2	3.7%	3.6%
3	7	y	101.7%	URDI	1	2.7%	2.6%
3	7	y	101.7%	TRDU2	1	2.7%	2.6%
3	7	y	101.7%	UNID 4	1	0.3%	0.3%
3	8	y	92.9%	FEOV*	14	84.3%	90.8%
3	8	y	92.9%	SOOL	2	4.6%	5.0%
3	8	y	92.9%	VETH	1	2.9%	3.1%
3	8	y	92.9%	ME_(melelotus)	1	1.1%	1.2%
3	9	y	103.0%	FEOV*	15	94.3%	91.6%
3	9	y	103.0%	ME_(melelotus)	1	6.0%	5.8%
3	9	y	103.0%	TRDU2	2	1.3%	1.3%
3	9	y	103.0%	SOOL	1	1.3%	1.3%
3	10	y	94.3%	FEOV*	6	30.5%	32.4%
3	10	y	94.3%	ME_(melelotus)	7	26.6%	28.2%
3	10	y	94.3%	TRDU2	7	7.6%	8.1%
3	10	y	94.3%	RURA	1	6.6%	7.0%
3	10	y	94.3%	SIAL	2	5.3%	5.6%
3	10	y	94.3%	CHAL	1	5.0%	5.3%
3	10	y	94.3%	B RTE	2	4.3%	4.6%
3	10	y	94.3%	VETH	2	3.3%	3.5%
3	10	y	94.3%	SPCR	2	2.0%	2.1%
3	10	y	94.3%	SOOL	2	1.7%	1.8%
3	10	y	94.3%	LIDA	1	1.0%	1.1%
3	10	y	94.3%	LUSE	1	0.3%	0.4%
3	11	y	76.0%	FEOV*	10	76.0%	100.0%
3	12	y	76.0%	FEOV*	9	90.0%	118.4%
3	12	y	95.0%	TRDU2	1	2.0%	2.1%
3	12	y	95.0%	SOOL	3	2.0%	2.1%
3	12	y	95.0%	ME_(melica)	1	0.5%	0.5%
3	12	y	95.0%	ELCI	1	0.5%	0.5%
5	1	y	82.0%	FEOV*	8	80.0%	97.6%
5	1	y	82.0%	TRDU2	1	2.0%	2.4%
5	2	y	78.6%	FEOV*	10	71.4%	90.9%
5	2	y	78.6%	PHAR	1	7.1%	9.1%
5	3	y	114.5%	FEOV*	10	86.5%	75.5%
5	3	y	114.5%	LUSE	5	20.0%	17.5%
5	3	y	114.5%	TRDU2	1	4.0%	3.5%
5	3	y	114.5%	ME_(melica)	2	4.0%	3.5%
5	4	y	94.0%	FEOV*	7	55.0%	58.5%
5	4	y	94.0%	THMO	6	21.0%	22.3%
5	4	y	94.0%	LASE	4	13.5%	14.4%
5	4	y	94.0%	LUSE	1	3.5%	3.7%
5	4	y	94.0%	CHAL	1	1.0%	1.1%
5	5	y	116.1%	FEOV*	14	95.7%	82.5%
5	5	y	116.1%	LUSE	6	15.0%	12.9%
5	5	y	116.1%	TRDU2	2	3.2%	2.8%
5	5	y	116.1%	VETH	1	1.8%	1.5%
5	5	y	116.1%	ME_(melica)	1	0.4%	0.3%
5	6	y	82.0%	FEOV*	8	80.0%	97.6%

# Chief Joseph Dam Vegetation Monitoring

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Site	Transect	Irrigated?	Total Cover for Transect	Species	Number of Occurrences/ Transect	Absolute %	Relative %
5	6	y	82.0%	TRDU2	1	1.5%	1.8%
5	6	y	82.0%	LASE	1	0.5%	0.6%
5	7	y	96.8%	FEOV*	13	77.1%	79.7%
5	7	y	96.8%	LUSE	4	12.9%	13.3%
5	7	y	96.8%	VETH	2	5.0%	5.2%
5	7	y	96.8%	TRDU2	1	0.7%	0.7%
5	7	y	96.8%	LASE	1	0.7%	0.7%
5	7	y	96.8%	ORHY	1	0.4%	0.4%
5	8	y	100.0%	FEOV*	9	85.5%	85.5%
5	8	y	100.0%	THMO	3	6.5%	6.5%
5	8	y	100.0%	RIAR	1	5.0%	5.0%
5	8	y	100.0%	LUSE	1	1.0%	1.0%
5	8	y	100.0%	LI (comp-LC)	1	1.0%	1.0%
5	8	y	100.0%	EPCI	1	1.0%	1.0%
5	9	y	114.0%	FEOV*	15	96.7%	84.8%
5	9	y	114.0%	LUSE	8	14.7%	12.9%
5	9	y	114.0%	ME (melica)	1	2.0%	1.8%
5	9	y	114.0%	CIAR	1	0.3%	0.3%
5	9	y	114.0%	ACMI	1	0.3%	0.3%
5	10	y	106.1%	FEOV*	10	100.0%	94.3%
5	10	y	106.1%	LUSE	4	5.6%	5.2%
5	10	y	106.1%	CIAR	1	0.5%	0.5%
5	11	y	107.5%	FEOV*	14	90.0%	83.7%
5	11	y	107.5%	LUSE	6	14.6%	13.6%
5	11	y	107.5%	POCO	1	1.8%	1.7%
5	11	y	107.5%	UNID Comp	2	1.1%	1.0%
5	12	y	100.5%	FEOV*	9	79.0%	78.6%
5	12	y	100.5%	LUSE	2	9.0%	9.0%
5	12	y	100.5%	LASE	1	5.5%	5.5%
5	12	y	100.5%	SOOL	2	5.0%	5.0%
5	12	y	100.5%	TRDU2	2	2.0%	2.0%
5	13	y	97.0%	FEOV*	10	90.0%	92.8%
5	13	y	97.0%	ME (melica)	1	4.0%	4.1%
5	13	y	97.0%	LUSE	2	3.0%	3.1%
5	14	y	102.1%	FEOV*	10	92.0%	90.2%
5	14	y	102.1%	ME (melica)	2	10.0%	9.8%
5	14	y	102.1%	TRDU	1	0.1%	0.0%
5	15	y	0.0%	None	0	0.0%	0.0%
6	BB1	n	61.6%	BRTE	9	38.0%	61.7%
6	BB1	n	61.6%	AGSP	1	9.5%	15.4%
6	BB1	n	61.6%	STCO	2	5.0%	8.1%
6	BB1	n	61.6%	Misc.	6	4.0%	6.5%
6	BB1	n	61.6%	BASA	2	2.6%	4.1%
6	BB1	n	61.6%	COLI	2	2.0%	3.2%
6	BB1	n	61.6%	PLPA	1	0.5%	0.8%
6	BB2	n	74.5%	STCO	5	23.0%	30.9%
6	BB2	n	74.5%	BR 1	7	14.0%	18.8%
6	BB2	n	74.5%	BRTE	7	11.0%	14.8%
6	BB2	n	74.5%	AGSP	2	8.0%	10.7%
6	BB2	n	74.5%	Misc.	4	4.0%	5.4%
6	BB2	n	74.5%	ER 2	1	4.0%	5.4%
6	BB2	n	74.5%	FEID	1	3.5%	4.7%
6	BB2	n	74.5%	ER 1	1	2.0%	2.7%
6	BB2	n	74.5%	LAPO	1	1.5%	2.0%



# Chief Joseph Dam Vegetation Monitoring

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Site	Transect	Irrigated?	Total Cover for Transect	Species	Number of Occurrences/ Transect	Absolute %	Relative %
6	BB2	n	74.5%	GAAP	1	1.5%	2.0%
6	BB2	n	74.5%	ACMI	1	1.0%	1.3%
6	BB2	n	74.5%	SOOL	1	0.5%	0.7%
6	BB2	n	74.5%	AICA	1	0.5%	0.7%
6	BS1	n	50.1%	AGSP	5	16.8%	33.6%
6	BS1	n	50.1%	BRTE	4	12.0%	24.0%
6	BS1	n	50.1%	FEID	5	7.8%	15.5%
6	BS1	n	50.1%	BASA	1	6.0%	12.0%
6	BS1	n	50.1%	ERNE	1	3.0%	6.0%
6	BS1	n	50.1%	Misc.	2	1.7%	3.4%
6	BS1	n	50.1%	VUMI	1	0.9%	1.7%
6	BS1	n	50.1%	LUSE	1	0.9%	1.7%
6	BS1	n	50.1%	BRCO	2	0.5%	0.9%
6	BS1	n	50.1%	UNID 12	1	0.4%	0.9%
6	BS1	n	50.1%	COLI	2	0.1%	0.2%
6	BS2	n	68.0%	STCO	7	25.5%	37.5%
6	BS2	n	68.0%	CAFI	3	13.0%	19.1%
6	BS2	n	68.0%	LU 1	2	9.0%	13.2%
6	BS2	n	68.0%	BRTE	3	8.0%	11.8%
6	BS2	n	68.0%	Misc.	7	5.0%	7.4%
6	BS2	n	68.0%	VU_	4	4.5%	6.6%
6	BS2	n	68.0%	PLPA	3	1.5%	2.2%
6	BS2	n	68.0%	ACMI	1	1.0%	1.5%
6	BS2	n	68.0%	COLI	1	0.5%	0.7%
7	BS1	n	92.5%	BRTE	6	24.5%	26.5%
7	BS1	n	92.5%	LUSE	6	21.0%	22.7%
7	BS1	n	92.5%	BR 1	7	19.0%	20.5%
7	BS1	n	92.5%	STCO	6	18.5%	20.0%
7	BS1	n	92.5%	POA 2	2	5.0%	5.4%
7	BS1	n	92.5%	VUMI	3	2.5%	2.7%
7	BS1	n	92.5%	ACMI	2	1.5%	1.6%
7	BS1	n	92.5%	Misc.	1	0.5%	0.5%
7	BS2	n	63.0%	BRTE	8	25.0%	39.7%
7	BS2	n	63.0%	PLPA	4	10.0%	15.9%
7	BS2	n	63.0%	STCO	4	9.0%	14.3%
7	BS2	n	63.0%	AR_(aristida)	2	9.0%	14.3%
7	BS2	n	63.0%	COLI	4	3.5%	5.6%
7	BS2	n	63.0%	VUMI	3	3.0%	4.8%
7	BS2	n	63.0%	STOC	2	2.0%	3.2%
7	BS2	n	63.0%	Misc.	1	0.5%	0.8%
7	BS2	n	63.0%	MAEX	1	0.5%	0.8%
7	BS2	n	63.0%	BR 1	1	0.5%	0.8%
7	R1	n	94.5%	SMST	9	58.5%	61.9%
7	R1	n	94.5%	POPR	5	17.0%	18.0%
7	R1	n	94.5%	COAR	2	10.0%	10.6%
7	R1	n	94.5%	AG_	1	4.5%	4.8%
7	R1	n	94.5%	GAAP	3	2.5%	2.7%
7	R1	n	94.5%	CA_	1	1.5%	1.6%
7	R1	n	94.5%	EQHY	1	0.5%	0.5%
7	R2	n	68.5%	AGSP	5	24.5%	35.8%
7	R2	n	68.5%	BRTE	7	19.0%	27.7%
7	R2	n	68.5%	POA 2	3	10.0%	14.6%
7	R2	n	68.5%	BR 1	4	7.0%	10.2%
7	R2	n	68.5%	POA 1	1	4.5%	6.6%

# Chief Joseph Dam Vegetation Monitoring

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Site	Transect	Irrigated?	Total Cover for Transect	Species	Number of Occurrences/ Transect	Absolute %	Relative %
7	R2	n	68.5%	UNID Comp	1	1.5%	2.2%
7	R2	n	68.5%	TRDU	1	1.5%	2.2%
7	R2	n	68.5%	Misc.	1	0.5%	0.7%
7	R2	n	68.5%	COLI	1	0.0%	0.0%
9	BB1	n	78.0%	BRTE	10	41.5%	53.2%
9	BB1	n	78.0%	SPCR	6	17.5%	22.4%
9	BB1	n	78.0%	STCO	5	9.5%	12.2%
9	BB1	n	78.0%	SY Altis	2	6.0%	7.7%
9	BB1	n	78.0%	Misc.	3	2.5%	3.2%
9	BB1	n	78.0%	ER 2	2	1.0%	1.3%
9	R1	n	74.3%	ELCI	3	30.7%	41.3%
9	R1	n	74.3%	POPA	2	23.6%	31.7%
9	R1	n	74.3%	POCO	2	12.9%	17.3%
9	R1	n	74.3%	BR 1	1	4.3%	5.8%
9	R1	n	74.3%	AG	3	2.9%	3.8%
9	R2	n	94.0%	ELCI	5	39.5%	42.0%
9	R2	n	94.0%	BR 1	7	31.5%	33.5%
9	R2	n	94.0%	LASE	6	16.5%	17.6%
9	R2	n	94.0%	UNID 1	6	6.5%	6.9%
11	1	y	114.8%	FEOV*	15	98.7%	86.0%
11	1	y	114.8%	SOOL	6	9.7%	8.5%
11	1	y	114.8%	LUSE	5	4.4%	3.8%
11	1	y	114.8%	CIAR	2	2.0%	1.7%
11	2	y	103.4%	FEOV*	15	95.3%	92.2%
11	2	y	103.4%	SOOL	8	5.4%	5.2%
11	2	y	103.4%	UNID 2	2	1.3%	1.3%
11	2	y	103.4%	LUSE	1	1.3%	1.3%
11	2	y	103.4%	CI	1	0.0%	0.0%
11	3	y	118.1%	FEOV*	10	100.0%	84.7%
11	3	y	118.1%	LUSE	6	8.1%	6.8%
11	3	y	118.1%	SOOL	5	7.5%	6.4%
11	3	y	118.1%	UNID 13	5	2.1%	1.7%
11	3	y	118.1%	EQLA	1	0.5%	0.4%
11	4	y	109.1%	FEOV*	15	95.5%	87.6%
11	4	y	109.1%	LUSE	5	5.4%	5.0%
11	4	y	109.1%	ME (melica)	1	3.4%	3.1%
11	4	y	109.1%	UNID 2	5	2.4%	2.2%
11	4	y	109.1%	CI	3	2.4%	2.2%
11	4	y	109.1%	FALI	1	1.3%	1.2%
11	5	y	107.1%	FEOV*	10	98.0%	91.5%
11	5	y	107.1%	LUSE	3	7.5%	7.0%
11	5	y	107.1%	CI	2	1.5%	1.4%
11	5	y	107.1%	UNID 2	2	0.1%	0.1%
11	6	y	109.5%	FEOV*	10	100.0%	91.3%
11	6	y	109.5%	LUSE	3	9.0%	8.2%
11	6	y	109.5%	TRDU2	1	0.5%	0.5%
11	7	y	105.6%	FEOV*	10	100.0%	94.7%
11	7	y	105.6%	EQLA	2	3.5%	3.3%
11	7	y	105.6%	ACMI	2	1.6%	1.5%
11	7	y	105.6%	LUSE	1	0.5%	0.5%
11	7	y	105.6%	UNID 2	1	0.1%	0.0%
11	8	y	120.6%	FEOV*	10	100.0%	82.9%
11	8	y	120.6%	LUSE	5	18.1%	15.0%
11	8	y	120.6%	C'	1	1.5%	1.2%

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Site	Transect	Irrigated?	Total Cover for Transect	Species	Number of Occurrences/ Transect	Absolute %	Relative %
11	8	y	120.6%	UNID 2	2	1.1%	0.9%
11	9	y	105.0%	FEOV*	10	93.0%	88.6%
11	9	y	105.0%	EQLA	1	8.0%	7.6%
11	9	y	105.0%	LUSE	2	2.0%	1.9%
11	9	y	105.0%	CI__	1	1.0%	1.0%
11	9	y	105.0%	TRDU	1	0.5%	0.5%
11	9	y	105.0%	ARCA	1	0.5%	0.5%
11	10	y	95.6%	FEOV*	9	88.0%	92.1%
11	10	y	95.6%	ME__ (melica)	1	4.0%	4.2%
11	10	y	95.6%	LUSE	1	3.0%	3.1%
11	10	y	95.6%	EQLA	3	0.6%	0.6%
11	11	y	103.0%	FEOV*	10	100.0%	97.1%
11	11	y	103.0%	EPCI	3	2.0%	1.9%
11	11	y	103.0%	LUSE	1	1.0%	1.0%
11	12	y	102.6%	FEOV*	10	100.0%	97.5%
11	12	y	102.6%	LUSE	1	2.5%	2.4%
11	12	y	102.6%	EQLA	1	0.1%	0.0%
11	13	y	117.1%	FEOV*	12	100.0%	85.4%
11	13	y	117.1%	LUSE	4	13.3%	11.4%
11	13	y	117.1%	RURA	1	1.7%	1.4%
11	13	y	117.1%	SOOL	2	0.9%	0.7%
11	13	y	117.1%	CIAR	1	0.8%	0.7%
11	13	y	117.1%	UNID 2	1	0.4%	0.4%
11	14	y	109.4%	FEOV*	15	90.7%	82.9%
11	14	y	109.4%	SOOL	6	16.0%	14.6%
11	14	y	109.4%	EPAN	1	1.0%	0.9%
11	14	y	109.4%	ELCI	1	1.0%	0.9%
11	14	y	109.4%	CI__	2	0.7%	0.6%
11	14	y	109.4%	AG__	1	0.0%	0.0%
11	15	y	99.4%	FEOV*	15	92.7%	93.2%
11	15	y	99.4%	SOOL	4	3.7%	3.7%
11	15	y	99.4%	UNID 2	5	2.0%	2.0%
11	15	y	99.4%	CI__	3	0.7%	0.7%
11	15	y	99.4%	UNID 5	1	0.3%	0.3%
11	16	y	107.1%	FEOV*	10	100.0%	93.4%
11	16	y	107.1%	ME__ (meislotus)	1	5.0%	4.7%
11	16	y	107.1%	LUSE	1	2.0%	1.9%
11	16	y	107.1%	UNID 4	1	0.1%	0.0%
11	17	y	94.0%	FEOV*	14	88.2%	93.8%
11	17	y	94.0%	LUSE	4	4.6%	4.9%
11	17	y	94.0%	UNID 2	2	0.4%	0.4%
11	17	y	94.0%	VETH	1	0.4%	0.4%
11	17	y	94.0%	SOOL	1	0.4%	0.4%
11	17	y	94.0%	UNID 4	1	0.0%	0.0%
11	18	y	90.0%	FEOV*	9	90.0%	100.0%
11	19	y	106.1%	FEOV*	13	85.7%	80.8%
11	19	y	106.1%	SOOL	5	16.8%	15.8%
11	19	y	106.1%	EPAN	1	2.1%	2.0%
11	19	y	106.1%	UNID 2	2	1.4%	1.3%
11	19	y	106.1%	CIAR	1	0.0%	0.0%
11	20	y	99.1%	FEOV*	10	40.0%	40.4%
11	20	y	99.1%	EQLA	8	26.3%	26.6%
11	20	y	99.1%	SODU	4	15.0%	15.1%
11	20	y	99.1%	SOOL	6	6.3%	6.4%

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Site	Transect	Irrigated?	Total Cover for Transect	Species	Number of Occurrences/ Transect	Absolute %	Relative %
11	20	y	99.1%	UNID 3	2	6.0%	6.1%
11	20	y	99.1%	AGSP	2	3.0%	3.0%
11	20	y	99.1%	EQAG	3	2.4%	2.4%
11	20	y	99.1%	TYLA	1	0.0%	0.0%
11	20	y	99.1%	CI	1	0.0%	0.0%
11	21	y	108.4%	FEOV*	15	95.7%	88.3%
11	21	y	108.4%	SOOL	8	10.3%	9.5%
11	21	y	108.4%	EOLA	2	1.0%	1.0%
11	21	y	108.4%	UNID 2	2	0.7%	0.6%
11	21	y	108.4%	CI	1	0.7%	0.6%
11	22	y	96.6%	FEOV*	14	90.4%	93.6%
11	22	y	96.6%	SOOL	3	2.5%	2.6%
11	22	y	96.6%	LASE	1	2.1%	2.2%
11	22	y	96.6%	UNID 2	3	0.8%	0.8%
11	22	y	96.6%	TAOF	1	0.4%	0.4%
11	22	y	96.6%	RURA	1	0.4%	0.4%
11	22	y	96.6%	GAAR	1	0.0%	0.0%
11	23	y	105.4%	FEOV*	15	100.0%	94.9%
11	23	y	105.4%	CI	3	1.3%	1.3%
11	23	y	105.4%	SOOL	4	1.0%	1.0%
11	23	y	105.4%	EQAG	3	1.0%	0.9%
11	23	y	105.4%	UNID 2	1	0.7%	0.6%
11	23	y	105.4%	ME (melica)	2	0.7%	0.6%
11	23	y	105.4%	EOLA	2	0.7%	0.6%
11	24	y	103.0%	FEOV*	10	92.0%	89.3%
11	24	y	103.0%	SOOL	5	5.5%	5.3%
11	24	y	103.0%	RURA	1	3.0%	2.9%
11	24	y	103.0%	CIAR	1	1.5%	1.5%
11	24	y	103.0%	TRDU2	1	1.0%	1.0%
12	1	y	78.5%	FEOV*	5	25.0%	31.8%
12	1	y	78.5%	PO		15.0%	19.1%
12	1	y	78.5%	SOOL	8	14.5%	18.5%
12	1	y	78.5%	POAM		9.5%	12.1%
12	1	y	78.5%	EP (epilobium)		7.5%	9.6%
12	1	y	78.5%	DISY	1	6.5%	8.3%
12	1	y	78.5%	ME (melica)	1	0.5%	0.6%
12	1	y	78.5%	COLI	1	0.0%	0.0%
12	1	y	78.5%	BRMO	1	0.0%	0.0%
12	2	y	61.0%	FEOV*	7	52.5%	86.1%
12	2	y	61.0%	SOOL	3	3.0%	4.9%
12	2	y	61.0%	CIAR	3	3.0%	4.9%
12	2	y	61.0%	LI (comp-LC)		1.5%	2.5%
12	2	y	61.0%	VETH	1	1.0%	1.6%
12	3	y	103.0%	FEOV*	8	62.0%	60.2%
12	3	y	103.0%	SOOL	9	21.5%	20.9%
12	3	y	103.0%	PHAR	1	10.0%	9.7%
12	3	y	103.0%	FEAV*	1	4.5%	4.4%
12	3	y	103.0%	POPR	1	3.5%	3.4%
12	3	y	103.0%	LI (comp-LC)	1	1.0%	1.0%
12	3	y	103.0%	CIAR	1	0.5%	0.5%
12	4	y	83.5%	FEOV*	7	61.5%	73.7%
12	4	y	83.5%	SOOL	4	11.0%	13.2%
12	4	y	83.5%	EPWA?	1	8.0%	9.6%
12	4	y	83.5%	URDI	1	2.0%	2.4%

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Site	Transect	Irrigated?	Total Cover for Transect	Species	Number of Occurrences/ Transect	Absolute %	Relative %
12	4	y	83.5%	CIAR	1	1.0%	1.2%
12	5	y	119.0%	FEOV*	10	87.0%	73.1%
12	5	y	119.0%	SOOL	9	28.5%	23.9%
12	5	y	119.0%	VETH	1	2.5%	2.1%
12	5	y	119.0%	CIAR	1	1.0%	0.8%
12	6	y	80.0%	FEOV*	7	60.5%	75.6%
12	6	y	80.0%	POPR	2	13.5%	16.9%
12	6	y	80.0%	VETH	1	3.0%	3.7%
12	6	y	80.0%	SOOL	1	3.0%	3.7%
12	6	y	80.0%	BRTE	1	0.0%	0.0%
12	7	y	103.5%	FEOV*	10	96.0%	92.8%
12	7	y	103.5%	LUSE		4.5%	4.3%
12	7	y	103.5%	AGCR	1	2.0%	1.9%
12	7	y	103.5%	SOOL	1	1.0%	1.0%
12	8	y	104.0%	FEOV*	10	90.5%	87.0%
12	8	y	104.0%	ME_(melica)	3	13.5%	13.0%
12	9	y	94.0%	FEOV*	10	93.5%	99.5%
12	9	y	94.0%	SOOL	1	0.5%	0.5%
12	10	y	85.5%	FEOV*	8	71.9%	84.1%
12	10	y	85.5%	UNID7	1	8.1%	9.5%
12	10	y	85.5%	BRTE	1	5.4%	6.3%
12	11	y	98.0%	FEOV*	10	97.0%	99.0%
12	11	y	98.0%	LASE	2	1.0%	1.0%
12	12	y	80.0%	FEOV*	8	80.0%	100.0%
12	13	y	94.5%	FEOV*	10	92.5%	97.9%
12	13	y	94.5%	LUSE		2.0%	2.1%
12	14	y	92.5%	FEOV*	8	80.0%	86.5%
12	14	y	92.5%	UNID9		9.0%	9.7%
12	14	y	92.5%	URDI		2.0%	2.2%
12	14	y	92.5%	VETH	1	1.0%	1.1%
12	14	y	92.5%	CIAR	1	0.5%	0.5%
12	15	y	92.5%	FEOV*	10	92.0%	99.4%
12	15	y	92.5%	SOOL	1	0.5%	0.5%
12	15	y	92.5%	VETH	1	0.0%	0.0%
15	1	y	108.6%	DAGL	9	74.4%	68.5%
15	1	y	108.6%	FEOV*	3	19.0%	17.5%
15	1	y	108.6%	FEID	3	9.0%	8.3%
15	1	y	108.6%	ME_(melelotus)	5	6.2%	5.7%
15	2	y	101.1%	FEOV*	10	99.0%	98.0%
15	2	y	101.1%	UNID 2	3	1.1%	1.0%
15	2	y	101.1%	VETH	1	0.5%	0.5%
15	2	y	101.1%	CI	1	0.5%	0.5%
15	3	y	121.1%	FEOV*	10	100.0%	82.6%
15	3	y	121.1%	ME_(melelotus)	2	18.0%	14.9%
15	3	y	121.1%	UNID 2	3	2.1%	1.7%
15	3	y	121.1%	DAGL	1	1.0%	0.8%
15	4	y	103.0%	FEOV*	10	100.0%	97.1%
15	4	y	103.0%	TRDU2	2	2.0%	1.9%
15	4	y	103.0%	UNID 2	1	1.0%	1.0%
15	5	y	106.3%	FEOV*	8	100.0%	94.1%
15	5	y	106.3%	ME_(melelotus)	1	5.0%	4.7%
15	5	y	106.3%	CI	1	1.3%	1.2%
15	6	y	112.5%	FEOV*	10	100.0%	88.9%
15	6	y	112.5%	ME_(melelotus)	2	12.5%	11.1%

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Site	Transect	Irrigated?	Total Cover for Transect	Species	Number of Occurrences/ Transect	Absolute %	Relative %
15	7	y	146.6%	FEOV*	10	98.0%	66.9%
15	7	y	146.6%	ME_ (melelotus)	7	47.1%	32.1%
15	7	y	146.6%	VETH	1	1.5%	1.0%
15	8	y	157.6%	FEOV*	10	100.0%	63.5%
15	8	y	157.6%	ME_ (melelotus)	8	45.0%	28.6%
15	8	y	157.6%	ME_ (melica)	2	10.1%	6.4%
15	8	y	157.6%	VETH	2	2.5%	1.6%
15	9	y	114.0%	FEOV*	10	100.0%	87.7%
15	9	y	114.0%	ME_ (melelotus)	2	11.0%	9.6%
15	9	y	114.0%	CI_	2	3.0%	2.6%
18	BB1	n	57.7%	BRTE	7	31.5%	54.6%
18	BB1	n	57.7%	FEID	3	9.0%	15.6%
18	BB1	n	57.7%	STCO	2	7.5%	13.0%
18	BB1	n	57.7%	ARCA	1	4.0%	6.9%
18	BB1	n	57.7%	ERHE	2	3.0%	5.2%
18	BB1	n	57.7%	ERNE	3	2.6%	4.4%
18	BB1	n	57.7%	UNID 100	2	0.1%	0.2%
18	BB2	n	87.0%	BRTE	8	37.5%	43.1%
18	BB2	n	87.0%	SPCR	4	27.5%	31.6%
18	BB2	n	87.0%	STCO	4	14.0%	16.1%
18	BB2	n	87.0%	FEID	1	4.0%	4.6%
18	BB2	n	87.0%	UNID 100	1	1.5%	1.7%
18	BB2	n	87.0%	ACMI	1	1.5%	1.7%
18	BB2	n	87.0%	ERNE	1	1.0%	1.1%
18	BS1	n	121.6%	BRTE	10	85.0%	69.9%
18	BS1	n	121.6%	BRCO	2	13.0%	10.7%
18	BS1	n	121.6%	POPA	1	10.0%	8.2%
18	BS1	n	121.6%	LUSE	1	6.0%	4.9%
18	BS1	n	121.6%	ACMI	3	4.0%	3.3%
18	BS1	n	121.6%	UNID 100	1	1.0%	0.8%
18	BS1	n	121.6%	Misc.	1	1.0%	0.8%
18	BS1	n	121.6%	ERHE	1	1.0%	0.8%
18	BS1	n	121.6%	ERFI	1	0.5%	0.4%
18	BS1	n	121.6%	LASE	1	0.1%	0.0%
18	BS2	n	120.9%	BRTE	10	90.0%	74.4%
18	BS2	n	120.9%	SPCR	3	21.0%	17.4%
18	BS2	n	120.9%	SIAL	3	4.4%	3.6%
18	BS2	n	120.9%	UNID 100	2	2.5%	2.1%
18	BS2	n	120.9%	LASE	2	2.0%	1.7%
18	BS2	n	120.9%	BRCO	2	1.0%	0.8%
18	BS3	n	128.5%	BRTE	9	79.0%	61.5%
18	BS3	n	128.5%	UNID 104	8	23.0%	17.9%
18	BS3	n	128.5%	POID	1	10.0%	7.8%
18	BS3	n	128.5%	ELCI	1	5.0%	3.9%
18	BS3	n	128.5%	UNID 101	4	4.5%	3.5%
18	BS3	n	128.5%	TRDU	1	2.0%	1.6%
18	BS3	n	128.5%	FEID	1	2.0%	1.6%
18	BS3	n	128.5%	LOTR	1	1.5%	1.2%
18	BS3	n	128.5%	LASE	1	1.0%	0.8%
18	BS3	n	128.5%	Misc.	1	0.5%	0.4%
18	R1	n	43.0%	POID	2	20.0%	46.5%
18	R1	n	43.0%	SMST	4	16.0%	37.2%
18	R1	n	43.0%	CA_	2	5.0%	11.6%
18	R1	n	43.0%	CI_	1	2.0%	4.7%

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Site	Transect	Irrigated?	Total Cover for Transect	Species	Number of Occurrences/ Transect	Absolute %	Relative %
18	R2	n	78.0%	SMST	8	40.5%	51.9%
18	R2	n	78.0%	AG	7	37.5%	48.1%
18	R2	n	78.0%	RHRA	5	19.0%	24.4%
18	R3	n	96.0%	POID	3	27.0%	28.1%
18	R3	n	96.0%	FEID	6	24.5%	25.5%
18	R3	n	96.0%	BRTE	2	20.0%	20.8%
18	R3	n	96.0%	AGSP	1	10.0%	10.4%
18	R3	n	96.0%	AMLY	3	5.0%	5.2%
18	R3	n	96.0%	ERFI	1	2.5%	2.6%
18	R3	n	96.0%	ERHE	1	2.0%	2.1%
18	R3	n	96.0%	UNID 103	1	1.5%	1.6%
18	R3	n	96.0%	BASA	1	1.5%	1.6%
18	R3	n	96.0%	UNID 102	1	1.0%	1.0%
18	R3	n	96.0%	LUSE	1	1.0%	1.0%
20	BB1	n	93.0%	BRTE	7	51.0%	54.8%
20	BB1	n	93.0%	UNID 105	2	15.0%	16.1%
20	BB1	n	93.0%	Misc.	4	5.5%	5.9%
20	BB1	n	93.0%	LUSE	2	3.0%	3.2%
20	BB1	n	93.0%	FEID	1	3.0%	3.2%
20	BB1	n	93.0%	CRAT	1	3.0%	3.2%
20	BB1	n	93.0%	STCO	1	2.5%	2.7%
20	BB1	n	93.0%	CEVU	1	2.5%	2.7%
20	BB1	n	93.0%	BASA	1	2.5%	2.7%
20	BB1	n	93.0%	ERNE	1	2.0%	2.2%
20	BB1	n	93.0%	AGSP	1	1.5%	1.6%
20	BB1	n	93.0%	ACMI	1	1.5%	1.6%
20	BB2	n	107.1%	BRTE	8	48.9%	45.7%
20	BB2	n	107.1%	AGSP	2	13.2%	12.4%
20	BB2	n	107.1%	STCO	2	10.7%	10.0%
20	BB2	n	107.1%	CEVU	4	8.7%	8.1%
20	BB2	n	107.1%	ARCA	1	8.7%	8.1%
20	BB2	n	107.1%	FEID	2	7.6%	7.1%
20	BB2	n	107.1%	LUSE	2	5.1%	4.8%
20	BB2	n	107.1%	ACMI	2	3.6%	3.3%
20	BB2	n	107.1%	Moss	1	2.0%	1.9%
20	BB2	n	107.1%	BRCO	1	0.5%	0.5%
20	BB2	n	107.1%	LASE	1	0.1%	0.0%
20	BS1	n	73.2%	BRTE	10	44.5%	60.8%
20	BS1	n	73.2%	PLPA	6	9.1%	12.4%
20	BS1	n	73.2%	FEID	5	8.5%	11.6%
20	BS1	n	73.2%	UNID 105	3	5.1%	7.0%
20	BS1	n	73.2%	Misc.	1	2.0%	2.7%
20	BS1	n	73.2%	LUSE	1	2.0%	2.7%
20	BS1	n	73.2%	BRCO	1	1.5%	2.1%
20	BS1	n	73.2%	UNID 100	1	0.5%	0.7%
20	BS2	n	96.6%	UNID 105	7	33.0%	34.2%
20	BS2	n	96.6%	FEID	5	27.5%	28.5%
20	BS2	n	96.6%	BRTE	3	20.5%	21.2%
20	BS2	n	96.6%	PLPA	3	9.5%	9.8%
20	BS2	n	96.6%	ACMI	2	2.5%	2.6%
20	BS2	n	96.6%	STCO	1	1.5%	1.6%
20	BS2	n	96.6%	UNID 106	1	1.0%	1.0%
20	BS2	n	96.6%	Misc.	1	1.0%	1.0%
20	BS2	n	96.6%	LUSE	1	0.1%	0.1%

# Chief Joseph Dam Vegetation Monitoring

COEX0154

Site	Transect	Irrigated?	Total Cover for Transect	Species	Number of Occurrences/ Transect	Absolute %	Relative %
20	R1	n	94.4%	FEID	7	71.3%	75.4%
20	R1	n	94.4%	TRDU2	3	8.1%	8.6%
20	R1	n	94.4%	UNID 105	1	5.0%	5.3%
20	R1	n	94.4%	VETH	2	2.5%	2.6%
20	R1	n	94.4%	BRTE	1	1.9%	2.0%
20	R1	n	94.4%	EQLA	2	1.3%	1.4%
20	R1	n	94.4%	SODU	1	1.3%	1.3%
20	R1	n	94.4%	LASE	2	1.3%	1.3%
20	R1	n	94.4%	ACMI	1	1.3%	1.3%
20	R1	n	94.4%	TAOF	1	0.6%	0.7%
20	R2	n	53.3%	UNID 105	5	20.6%	38.5%
20	R2	n	53.3%	POID	5	16.1%	30.2%
20	R2	n	53.3%	MOPE	3	5.0%	9.4%
20	R2	n	53.3%	TRDU2	1	4.4%	8.3%
20	R2	n	53.3%	SODU	1	3.3%	6.3%
20	R2	n	53.3%	TAOF	3	2.2%	4.2%
20	R2	n	53.3%	LUSE	1	1.1%	2.1%
20	R2	n	53.3%	COLI	1	0.6%	1.0%
20	R3	n	53.3%	UNID 105	3	24.4%	45.8%
20	R3	n	53.3%	FEID	2	9.4%	17.7%
20	R3	n	53.3%	BRTE	2	5.0%	9.4%
20	R3	n	53.3%	UNID 107	1	2.8%	5.2%
20	R3	n	46.1%	MOPE	1	1.7%	3.6%
20	R3	n	46.1%	Misc.	1	1.1%	2.4%
20	R3	n	46.1%	UNID 100	1	0.6%	1.2%
20	R3	n	46.1%	LASE	1	0.6%	1.2%
20	R3	n	46.1%	BRCO	1	0.6%	1.2%